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NATURAL RESOURCES ONTARIO 1973

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ANNUAL REPORT OF THE MINISTER

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ANNUAL REPORT

**OF THE MINISTER
OF NATURAL RESOURCES
OF THE PROVINCE
OF ONTARIO
FOR THE FISCAL YEAR
ENDING MARCH 31, 1973**

PRICE: $0.50

TO HIS HONOUR,
The Lieutenant-Governor
of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR
The undersigned begs respectfully to present to your Honour, the Annual Report of the Ministry of Natural Resources for the fiscal year beginning April 1, 1972, and ending March 31, 1973.

LEO BERNIER
Minister

Ontario

Ministry of
Natural
Resources



FOREWORD

The Ministry of Natural Resources was established within the Resources Development policy field in the new organization of government which became effective on April 1, 1972.

In terms of the previous organization, the new Ministry is composed principally of the Department of Lands and Forests, the Department of Mines and Northern Affairs, Conservation Authorities Branch from the Department of the Environment, and Historic Sites Branch from the Department of Tourism and Information.

Five ministerial agencies, Niagara Parks Commission, St. Lawrence Parks Commission, St. Clair Parkway Commission, the Mining Commissioner, and Ontario Energy Board, have been designated to report to the Minister of Natural Resources.

In its first year, the Ministry made significant advances in decentralization to improve its service to the public.

The new organization is indicated below and on Page 14 under 'Disposition of Senior Administration Staff, March 31, 1973'.

This is the first Annual Report of the Minister of Natural Resources. Related detail of interest is reported in *The Mining Review 1972 and Statistics, 1973.*

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DIVISION OF FORESTS

FOREST RESEARCH BRANCH

The Branch provides scientific and technical knowledge through research for the management of forest resources in Ontario. In the year under review, the highlight was the development of a number of fast-growing poplar clones which are suitable for pulping. (A clone is a group of plants which have originated by vegetative propagation from a single individual.) Industry, particularly in southeastern Ontario, is interested in this development.

FOREST MANAGEMENT BRANCH

The objective of the Branch is to produce optimum, continuous industrial, social and environmental benefits from public forests and to encourage and assist similar production on private forests in Ontario.

TREE SEED

Inventory, June 1, 1972	3,067,000,000 viable seeds
Distributed, 1972-3	608,000,000 viable seeds
Collected, 1972	5,864 hectolitres

TREE IMPROVEMENT

Plus trees, collected	5,940 scions
planted	2,015 grafted trees
Seed production areas	490.5 acres
Seed orchards	137.5 acres

PLANTING STOCK

Distribution, conifers	66,101,829
hardwoods	2,059,210
Total	68,161,039
Production targets seeded	76,752,000

PRIVATE LANDS

The Woodlands Improvement Act	No. of Agreements	Acres
1972-3	497	23,581
Total to March 31, 1973	2,635	149,082
Management programs prepared	482	18,146

Number of Trees Planted 8,751,400

AGREEMENT FORESTS, 1972-3

Agreements With	Acres Added	Acres Released	Total
Government of Canada	–	100.00	3,532.00
Conservation Authorities	2,094.78	103.10	91,018.97
Counties	2,950.80	82.74	145,146.03
Townships	–	–	3,229.24
Regional Municipalities	1,450.00	–	7,435.08
Totals	6,495.58	285.84	250,361.32

ADVISORY SERVICES

1. Total number of enquiries	22,613
2. Number of field inspections made	4,865
3. No. of management programs prepared	485
4. Areas, management plans prepared	10,652 acres
5. Trees planted	3,191,555
6. Timber marked – Sawtimber	1,325,164 cu. ft.
– Pulpwood	5,818 cords
7. Activities with youth groups	371 groups
8. Public education activities	1,256 items
9. Days spent on forestry instruction at schools, colleges, universities	250 days

DEVELOPMENT

A prototype model of a new planting machine, designed for use in Boreal Forest Regions of the Province, was tested in Ontario during the summer and fall. By special arrangement with Weyerhaeuser Company, the machine was tested in four States during February and March. The tests have been encouraging, and plans are being made to manufacture the planter in Ontario under licence to the Minister.

A proto-type multi-row nursery stock harvester was completed and successfully tested at Kemptville nursery.

Three planting machines and a scarification plow were tested and evaluated under the joint Federal-Provincial equipment testing program during the summer.

PEST CONTROL

The most destructive of all the forest insects and diseases in 1972 was the spruce budworm, which infested balsam and white spruce trees on a gross forested area of almost 20 million acres. Most of this acreage was in the north-central, north-eastern, and south-eastern portions of the province. After a careful assessment of values to be protected, spraying operations to control the insect were confined to approximately 47,000 acres of Crown land. The insecticide used was Zectran, at a rate of 1.2 ounces of active material per acre.

Other pest problems requiring control treatments were the white pine weevil, several species of sawflies of pines and spruce, white grubs, the blister rust of white pine, the annosus root rot, and mice. A total of 15,000 acres were treated to control these problems.

REGENERATION AND TENDING, 1972-3

(Areas in Acres)

REGENERATION	Crown Lands	Agreement Forests	W.I.A.	Sub-Total	Other Patent Lands	Total
Planting						
Nursery stock	69,443	2,843	10,661	82,947	6,177	89,124
Container stock	6,034	–	–	6,034	–	6,034
Seeding	21,749	10	5	21,764	–	21,764
Modified harvest cut	37,324	762	693	38,779	21,355	60,134
Scarification	10,014	75	46	10,135	–	10,135
Seed trees	5,480	–	60	5,540	500	6,040
Total	150,044	3,690	11,465	165,199	28,032	193,231
TENDING						
Hand clearing	9,656	3,825	625	14,107	–	14,107
Herbicide spraying	8,609	247	407	9,263	50	9,313
Thinning, improvement cuts	17,202	4,085	6,850	28,137	825	28,962
Girdling, frilling poisoning	(included with herbicide spraying)					
Marking	32,152	2,980	9,034	44,166	3,131	47,297
Pruning	2,542	611	445	3,598	100	3,698
Fertilization						
Drainage	896	35	30	961	100	1,061
Total	71,057	11,783	17,392	100,232	4,206	104,438
TOTAL AREA TREATED	221,101	15,473	28,857	265,431	32,238	297,669
Site preparation for seeding, planting or modified harvest cutting	57,765	778	2,523	61,066	100	61,166

TIMBER SALES BRANCH

SCALING

Scaling determines the volume of wood cut on Crown land and Agreement Forests. It is the basis for revenue and statistics related to primary wood-using industries. New measurement techniques are being continuously developed. The most promising at the moment is weight scaling.

LICENCES

Areas under Crown Timber Licence, Mar. 31, 1973	Square Miles
Under Sect. 2 C.T.A.	275.0
Under Sect. 3 C.T.A.	92,868.5
Under Sect. 5 C.T.A.	100.1
Total	93,243.6

MANAGEMENT PLANS

These provide the broad framework within which forest operations are carried out. More detailed operating plans (for shorter time periods) identify the stands to be cut, regenerated and tended, and the roads and other improvements required.

STATUS OF PLANS

Areas in square miles	Crown No.	Crown Area	Company No.	Company Area	Agreement Forests No.	Agreement Forests Area
Approved standard plans	36	24,865	–	–	23	181
Initial plans in force	13	21,323	33	40,115	–	–
Under prep or revision	27	25,161	24	49,870	37	200
Not under plans	10	28,408	-	-	-	-
Total	86	100,757	57	89,985	60	381

ACCESS ROADS

A total of 89.5 miles of new roads was built, and 29.8 miles of existing roads were improved during the fiscal year. Of these totals, logging access roads (for which costs are recovered over a five-year period through increased stumpage) amounted to 24.5 and 2.0 miles respectively. The remainder are forest access roads built for a variety of uses.

FOREST RESOURCES INVENTORY

New aerial photography covered 35,730 square miles in northeastern and southwestern Ontario during the fiscal year. Forest stand maps and inventory tabulations were completed for 7,100 miles.

PHOTO PROCESSING SUMMARY	Volume in Sq. Ft.	Volume in Dollars Cash Receipts	Ministry Work	Total	Year Ended Mar. 31
Contact Prints	141,080				
Mosaics	1,461				
Enlargements	5,755	$79,280	$53,497	$132,777	1970
Diapositives	697	67,342	36,082	103,424	1971
Copy Negatives	1,046	77,528	28,280	105,808	1972
Repro-positives	17,402	83,301	89,294	172,595	1973

PULP CHIPS

Ontario 1972	PRODUCTION No. Mills	Quantity b.d.t.	CONSUMPTION No. Mills	Quantity b.d.t
Ontario	94	1,073,268	14	903,273
Quebec	–	–	6	106,564
U.S.A.	–	–	4	63,431

LUMBER PRODUCTION

Ontario 1972 Softwood – 828.0 millions of foot-board measure
Hardwood – 231.1 millions of foot-board measure
Total – 1,059.1 millions of foot-board measure

VOLUME AND VALUE OF WOOD CUT FROM CROWN LAND, 1972-3

Species	Cubic Feet	Stumpage Value
SOFTWOODS		
White Pine	16,182,644.26	$ 979,900.45
Red Pine	4,230,671.60	273,219.62
Jack Pine	138,382,543.18	3,511,479.54
Spruce (all)	216,274,005.96	7,312,698.78
Hemlock	1,706,803.62	63,674.18
Balsam	13,717,649.35	301,246.44
Cedar (all)	299,251.98	19,838.23
Tamarack	52,802.99	1,329.84
Conifers (all)	136,398.33	3,825.20
Total Softwoods	390,982,771.27	12,467,212.28
HARDWOODS		
Maple (all)	6,739,667.56	398,386.51
Yellow Birch	5,191,681.58	473,404.73
White Birch	2,501,177.11	48,321.37
Oak (all)	302,736.93	17,072.77
Beech	383,332.80	14,331.59
Ash (all)	44,519.92	2,381.05
Elm	114,319.63	7,562.82
Basswood	234,510.35	21,507.31
Black Cherry	31,509.38	1,430.71
Poplar (all)	28,036,451.37	299,045.49
Hardwoods (all)	9,278,341.97	147,421.77
Total Hardwoods	52,858,248.60	1,430,866.12
Total Wood Cut	443,841,019.87	13,898,078.40

VOLUME AND VALUE OF WOOD CUT FROM AGREEMENT FORESTS, 1972-3

	Volume	Value
Sawlogs (cu. ft.)	205,593.52	$ 44,492.97
Poles, posts, etc. (cu. ft.)	41,093.56	7,245.28
Fuelwood (cords)	718.19	5,491.99
Pulpwood (cords)	11,184.99	54,862.15
Miscellaneous	–	7,002.19
Total, All Products	1,258,457.38	119,094.58

DIVISION OF MINES

GEOLOGICAL BRANCH

The Branch is responsible for the study of the geology and mineral deposits in Ontario. Its most important function is to give assistance to those engaged in the discovery and development of mineral wealth and to provide information for the planning of resource utilization for optimum benefit.

A Mineral Exploration Assistance Program now includes the areas of Cobalt-Gowganda, Geraldton-Beardmore, Kirkland Lake and Red Lake. Here the Government will repay an individual or company for one-third of the cost of approved expenditures up to $100,000. During the fiscal year, reimbursements under this plan amounted to $469,491.33.

GEOSCIENCE FIELD WORK

During the summer of 1972, the Branch had 29 geological surveys, three geophysical survey parties, and two geochemical surveys in the field; 37 projects were undertaken by 160 persons.

GEOLOGICAL SURVEYS SECTION

Twenty-two detailed geological mapping projects were distributed throughout the Canadian Shield in northern Ontario. Helicopter-supported reconnaissance covered 15,800 square miles in the District of Kenora (Patricia portion).

INDUSTRIAL MINERALS SECTION

During 1972, eight field studies were in progress. Quaternary geology surveys were carried out in four areas. The inventory of sand and gravel deposits in southern Ontario was continued.

RESIDENT GEOLOGISTS SECTION

Resident geologists were located at eight offices in Kenora, Red Lake, Thunder Bay, Sault Ste. Marie, Sudbury, Timmins, Kirkland Lake, and Toronto.

DATA RETRIEVAL AND EDUCATION SECTION

Some 210 Source Mineral Records for copper, nickel, lead and zinc were completed. Basic Mineral Exploration Classes, with 18 hours of instruction, were given at 14 places with an average attendance of 78 persons.

SCIENTIFIC REVIEW SECTION

During the year, the Section produced 22 reports, 20 'open file' reports, 87 preliminary maps, one coloured brochure, and several hundred illustrations, displays and transparencies.

CARTOGRAPHY SECTION

During the year, the Section produced 24 major maps, 323 base maps, 63 zinc etchings, 33 illustrations and a further addition to the popular "geological guidebook" series. It supplied miscellaneous graphic services for Branch programs.

MINES ENGINEERING BRANCH

The function of the Branch is primarily to ensure compliance with the requirements of The Mining Act. It was also responsible in 1972 for the administration and enforcement of The Pits and Quarries Control Act which regulates the siting, development and rehabilitation of pits and quarries in designated areas. By March 31, 1973, seventy geographic townships in southern Ontario had been designated.

The Industrial Minerals Section and the Petroleum Resources Section were transferred to the newly created Mineral Resources Branch in 1973.

CABLE TESTING LABORATORY

The Laboratory examines all mine hoisting ropes and conducts breaking tests. It completed 1,012 tests in 1972.

Tests for Ontario Mines	250
Special information tests	20
Tests for wire rope manufacturers	241
Tests for mines outside Ontario	482
Tests for industries other than mining	17
Other tests	2
Total	1,012

MINING RESCUE TRAINING

Seven fully equipped and staffed mine rescue stations, and 16 sub-stations equipped with breathing apparatus and supplies for emergency use, are in operation. Approximately 1,000 miners and supervisors receive training in the use of breathing apparatus and in the techniques of underground mine fire control for one full day every two months.

Sales of the Ontario Mine Rescue Handbook have expanded to new countries such as the Philippines and Norway. Throughout the world, several government agencies have adopted Ontario's system of mine rescue training.

During the year, 39 mine rescue teams entered district mine rescue competitions, and seven competed in the Provincial finals. The winner was the team representing Rio Algom Mines Limited, Quirke Division.

MINERAL RESEARCH BRANCH

The Branch is organized in two groups: the laboratory in Toronto and the Temiskaming Testing Laboratories in Cobalt.

Toronto Laboratory

The Laboratory provides technical services for Geological Branch in the form of rock analyses, mineralogical and petrological examinations, assays, geochemical analyses, studies of clays, soils and building stones, and special investigations and research projects.

Examinations, analyses and studies of products and raw materials are carried out for prospectors, geologists and engineers who may be private individuals or companies. Free work is done as a direct aid to exploration according to a coupon system. Holders of miner's licences, who have recorded claims or carried out assessment work, are issued free coupons which are redeemable in laboratory work.

WORK CARRIED OUT	for Public	for Geol. Branch	Total
Assays	1,498	2,794	4,292
30-element spectographic analyses	268	649	917
Mineral Identifications	157	76	233

Whole Rock Analyses	304
Geochemical Analyses	9,644
Special Analyses	2,089
Soils, Sand, Gravels	700

Temiskaming Testing Laboratories

The primary functions of this plant are the bulk sampling of silver, cobalt ores and concentrates and the determination of cobalt, nickel and copper so that the market value of mines shipments can be established.

Shipments are sampled, assayed and weighed, and then loaded and shipped on behalf of the producers.

Assay and analytical services also serve the public and provide assay facilities for some mines for control work.

Since 1971, assay coupons have been accepted in payment of analytical work.

Silver ore sampled	1,288,134 pounds
Silver bullion melted	22,118 pounds

DIVISION OF FISH AND WILDLIFE

The Division of Fish and Wildlife was formed on September 1, 1972, from four branches: Wildlife and Sport Fisheries from the former Outdoor Recreation Division; Commercial Fish and Fur from the former Resource Products Division; and Fish and Wildlife Research, newly formed from segments of the former Research Branch.

The objective of the Division is to provide and encourage recreational and industrial opportunities based on the fish wildlife resources of Ontario.

COMMERCIAL FISH AND FUR BRANCH

THE FRESHWATER FISH INDUSTRY

The 1972 harvest remained stable at 42.9 million pounds of food-fish ($8 million) and 12 million pounds of bait-fish ($1.8 million). The industry employed 5,300 people. Some of the major developments during the year were as follows.

The resumption of fishing for Lake Erie white bass under 10½ inches after mercury testing showed they were marketable.

The establishment of quotas on Lake Superior herring and Rainy Lake pickerel to ensure sustained harvest.

The continuation of experiments to find selective harvesting techniques for whitefish in northern Ontario.

Exploratory fishing to locate exploitable quantities of perch and coarse fish in Lake Erie, herring and chub in Lake Superior, and coarse fish in northern inland lakes.

The development of domestic markets for smoked sucker.

The investigation of new gear and holding facilities for bait-fish.

The withdrawal of a portion of northwestern Ontario from the jurisdiction of the Freshwater Fish Marketing Corporation.

The settlement of six claims for redundancy resulting from the operation of the Freshwater Fish Marketing Corporation ($144,395).

The termination of the Fisheries Loans Act program with the provision of loans at 50% of last year's amount ($145,100).

The continuing availability of reasonable boat insurance through federal-provincial co-operation in the Fishing Vessel Insurance Plan.

THE WILD FUR INDUSTRY

The major effort in fur management has been directed towards beaver. This involved aerial census of beaver colonies and specimen collections by trappers. A computer program was developed to analyze harvested beaver for

weight, age structure, family size and pelt quality by trapline or township, and physiographic units. From this analysis, the habitat can be evaluated and harvests and seasons set.

Continuing the emphasis on effective harvesting, the Branch was engaged in programs such as trapper workshops, Conibear trap exchange, financial and technical assistance to trap inventors, and the testing of new traps.

A marten and fisher study was initiated in Parry Sound District in co-operation with the University of Guelph.

RESOURCE DEVELOPMENT (Native People)

The following types of projects were carried out during the fiscal year under the Federal-Provincial Resources Development Agreement.

Fur. Trappers and their families from James Bay were assisted in establishing themselves on vacant traplines in central Ontario.

Commercial Fish. Lakes were surveyed to assess their potential. Fishermen were instructed in the netting, cleaning and packing of fish.

Tourism. Indian bands along the coast of Hudson and James Bays were assisted in setting up and operating tourist camps.

Hide Collection. 4,500 moose and deer hides were collected from hunters in the Province and distributed at tanning costs to Indian bands.

Timber. To assist Indians in managing reserve forests, technical advice was provided on reforestation, logging and lumber production.

Planning. Indians attended district meetings and took an active part in the planning of projects.

SPORT FISHERIES BRANCH

LICENCES

The Canadian Resident Angling Licence was established in 1972 to enable residents of Canada, who are not residents of Ontario, to angle in Ontario at a reduced cost of $3.00. A total of 14,469 were sold the first year.

Sales of non-resident angling licences increased by small percentages in 1972 to 425,001 seasonal and 233,333 three-day.

WATER QUALITY STUDIES

In co-operation with the Ministry of Transportation and Communications, a detailed three-year study was initiated to assess the impact of highway construction on a small watershed. Investigations were continued at Nanticoke Generating Station on Lake Erie to determine the effects of thermal discharge on the aquatic environment.

FISH HABITAT ENHANCEMENT

An experimental project was begun to restore the fish habitat of Wilmot Creek. Knowledge gained here will be applied to appropriate areas of the Province.

Other activities included construction of a fish ladder on the Ganaraska River, and a study of the effects of the controlled harvest of aquatic vegetation on fish production in the Kawartha Lakes.

LAKE AND STREAM SURVEYS

During 1972, a total of 757 lakes and 46 streams were examined to determine the capability of each water to produce fish; 164 fishing maps were prepared for distribution to the public.

ANGLER SURVEYS

A province-wide creel census program, and a data processing system for analyzing the results, was initiated during the year.

Provincial Fish Hatcheries

Fourteen fish hatcheries were operated during the year. These included eight trout rearing stations, five pond stations, and one trough station.

The new sub-station at Chatsworth Hatchery was completed. The new rearing facility will be used primarily to produce highly selected splake to rehabilitate Lake Huron.

Studies were undertaken for a new sub-station at Dorion Hatchery. Further studies were made of the proposal to locate a large hatchery complex adjacent to the Lennox Power Generating Station in southeastern Ontario with facilities for the supply of heated effluent water from the Hydro plant.

Research was continued in fish nutrition and fish diseases under a conjoint agreement with the University of Guelph.

WILDLIFE BRANCH

The Branch objective is to maintain wildlife populations for the recreational and economic benefit of the people of Ontario. Much effort is directed to the maintenance and improvement of wildlife habitat as it is habitat which determines the potential in wildlife numbers.

BIG GAME MANAGEMENT

The deer herd was favoured with a mild winter, the first in five years. The number of deer had been declining because of a series of unusually severe winters and because of a long-term trend in forest maturation. Hunter success remained at 20 per cent.

The moose herd is faring well. While the number of deer hunters has decreased since 1968, the number of moose hunters has been increasing. Therefore, more intensive management measures for moose are being formulated.

Black bear numbers, though difficult to assess, are believed to be holding constant. Nuisance bear are destroyed or, where possible, trapped and released elsewhere. The number of bear hunters is increasing.

Timber wolf numbers have held steady for 15 years, and coyotes have increased in the past 10 years. The wolf bounty was rescinded in 1972. The Wolf Damage to Live Stock Compensation Act, 1972, authorizes the payment of compensation to landowners who lose livestock to wolves or coyotes.

UPLAND GAME MANAGEMENT

Of the species which are subject to cyclic fluctuations, ruffed grouse are generally abundant, European hare are recovering from a low, cottontail rabbits and Hungarian partridge are still low, and sharp-tailed grouse are still declining in numbers.

Several of these species are declining because of the loss of habitat resulting from clean farming practices. The ring-necked pheasant is especially affected. Released birds

supplement the wild stock, but only in the fall, and only to a limited extent.

Woodcock, a migratory bird, breeds in large numbers in Ontario. Raccoon are plentiful.

WATERFOWL MANAGEMENT

A program to establish a wild-breeding population of the giant Canada goose has been underway since 1968, and wild birds may be seen in many places.

Snow geese in the far north reproduced poorly in 1972, resulting in low numbers in Ontario. The 1973 nesting season was much more favourable.

The fall populations of ducks of various species were similar to those in earlier years.

WILDLIFE EXTENSION AND PROVINCIAL WILDLIFE AREAS

More viewing and hunting opportunities became available during the year by an increase in managed properties from 18,000 to 35,000 acres. The program now includes interpretive programs on some agreement areas and on Provincial Wildlife Areas. Habitat is managed on the latter to provide viewing and hunting where these activities are restricted.

FIELD SERVICES

Conservation officers are responsible for the enforcement of laws and regulations under The Game and Fish Act, the Ontario Fishery Regulations, and the Migratory Birds Convention Act. Convictions totalled 5,103, about 100 more than in the previous year, and about 100 fewer than the record number registered in 1969-70.

Ministry officers supervised 24,823 hunter examinations in 1972, and 87 per cent of the candidates were successful.

CENTRAL LICENCE BUREAU

The Bureau records angling and hunting licences and obtains statistics through mailed questionnaires.

FISH AND WILDLIFE RESEARCH BRANCH

The Branch was formed within the new Division of Fish and Wildlife to integrate the programs of the Fisheries and Wildlife Sections of the former Research Branch more closely with the management branches and field units.

We have been fortunate to have several excellent long-term series of data collected by our research units on each of the Great Lakes and in Algonquin Provincial Park. As a consequence, our scientists have been in the forefront of a major international effort. The initial synthesis of this effort appeared in the June, 1972, issue of the Journal of the Fisheries Research Board to which our scientists contributed 11 of the 34 papers.

More recently, the Great Lakes Fishery Commission has published major background reports by our scientists on Lakes Ontario, Huron, Superior and Opeongo.

The use of our lake trout-brook trout hybrid, the splake, as the preferred stock for the rehabilitation of Lake Huron (and perhaps other depleted trout waters) has attracted attention abroad and led to the request that our scientists provide a chapter on the subject for the Commemorative Volume to be issued at the 19th Congress of the International Association of Limnology.

A major effort, to immunize wildlife against rabies, is near maturity. In co-operation with other agencies, an oral vaccine has been developed, and preliminary experiments on the delivery system have been conducted. This program has elicited world-wide interest.

DIVISION OF PARKS

PARK PLANNING BRANCH

Work continued on the evaluation of future parkland for Ontario residents with emphasis on increased recreation facilities in southern Ontario.

In the implementation of the Niagara Escarpment Report, 7,773 acres were purchased during the year, making a total of 27,592 acres acquired to date.

An additional 11,612 acres of beach properties on the Great Lakes were purchased during the year.

A 1,700-acre property was purchased at Indian Point on Balsam Lake, initiating the program recommended by the Canada-Ontario Trent-Severn-Rideau Study (C.O.R.T.S.).

MASTER PLANNING

Planning studies are now underway for more than 30 Provincial Parks. Planning was initiated and completed on Fathom Five, Peche Island, and Credit Forks. Continuing studies were made of Lake Superior, Killarney, and Ouimet Canyon.

During the year, the Bronte Creek Provincial Park Advisory Committee completed its recommendations, and a master plan was finalized and published.

The Advisory Committee for Quetico Provincial Park completed its report in June, 1972.

NEW PROJECTS

Silent Lake, ten miles north of Apsley on Highway 28, is a proposed natural environment park with camping and day-use programs. Master planning is completed, and the development of roads, buildings and campsites is underway.

Petroglyph Park, 35 miles north-east of Peterborough, near Nephton, is a proposed historical park which protects Indian rock carvings.

Methodist Point, ten miles north of Midland, is a proposed natural environment park with historical zones to preserve significant remains of Indian encampments and unique vegetative and geological features.

SKI STUDY

A special study was initiated during the year to assess the existing skiing operations in southern Ontario. A second stage will evaluate the potential of 200 possible new sites within 18 months.

NATURE RESERVES

Two new Nature Reserves were acquired during the year: *East Sister Island,* a 36-acre island in Lake Erie; and six properties totalling 338 acres on *Pelee Island.* Both contain significant Carolinian forest resources and wildlife features.

PARK MANAGEMENT BRANCH

Park visitation declined during the 1972 season, reflecting the bad weather on the majority of weekends. A total of 12,320,794 visitors (a 9.8 per cent decrease from the previous year) were accommodated, including 1,498,474 campers (a 7.5 per cent decrease).

In southern Ontario, many families had to be turned away on busy weekends despite the addition of nearly 1,000 more campsites to the system.

Facilities were improved at several parks.

Two new Provincial Parks were added to the system during the year, increasing the number from 113 to 115:

Charleston Lake, a natural environment park of 2,066 acres, 17 miles north-east of Gananoque; and

Fushimi Lake, a 3,000-acre park west of Hearst and north of Highway 11. Both parks provide camping facilities.

INTERPRETIVE SERVICES

During the year, 796,709 park visitors attended exhibits, conducted trips and lectures to learn more about Ontario and its parks, environment, resources management and history.

A Waterfowl Viewing Weekend was held at Long Point Provincial Park in co-operation with the Federation of Ontario Naturalists, and 18,000 visitors attended the event.

The number of parks offering interpretive programs continued to expand. Several new audio-visual programs were produced. A special logging exhibit was installed at Wakami Provincial Park.

PROVINCIAL PARK FEES

	1971	1972
Vehicle and Campsite Permit	$ 2.50 per day	$ 3.50
with electricity	3.00 per day	4.00
Vehicle Entry Permit	1.00 per day	1.50
	10.00 per year	15.00
Bus Entry Permit	6.00 per day	10.00
Interior Camping Permit	1.00 per day	2.00
	5.00 for 16 days	20.00
Group Camping Permit	0.10 per person per day	0.00
Snowmobile Permit	0.00 per day	1.00
Ski-tow Permit	1.00 per day	2.00

WINTER PARKS

During the winter of 1972-3, four parks were operated on a winter basis: Arrowhead, near Huntsville; Sibbald Point, on Lake Simcoe; Pinery, on Lake Huron; and Rondeau, on Lake Erie. Winter facilities included snow-plowed roads and campsites, heated washrooms with hot water, central drinking water, fuelwood supply, garbage disposal, and electrical outlets (except at Rondeau).

Ski-tows were operated at Pinery and Remi Lake Provincial Parks. Many other parks were used informally for activities such as snowshoeing, cross-country skiing, and tobogganing.

SNOWMOBILE TRAILS

Snowmobiling was permitted in Provincial Parks on approximately 200 miles of marked trails and 700 miles of park roads during the winter of 1972-3. In addition, over 600 miles of cross-country snowmobile trails were operated on public lands in Parry Sound, Lindsay and Tweed Districts.

ACCESS POINTS

During the year, over 675 access points with parking areas and boat launch ramps were maintained to provide boaters with access to lakes and rivers. The program is expanding by 40 to 50 sites a year.

CANOE ROUTES

In 1972, more than 82,000 persons entered Algonquin and Quetico Provincial Parks for interior canoe camping.

A booklet, Northern Ontario Canoe Routes, summarizes 125 routes representing 11,000 miles of canoeing waterways.

A program to document canoe waterways in southern Ontario was started in 1972.

HISTORIC SITES BRANCH

The Branch provides archaeological and historical research for historic sites and zones and is engaged in a survey of historical sites throughout the Province. It operates three Historic Parks.

Sainte-Marie Among the Hurons, Midland, is a reconstructed Jesuit Mission of the early 1600s which functions as a tourist attraction, educational resource, study centre and archival repository. It had 133,000 visitors in 1972.

Museum of the Upper Lakes, Wasaga Beach, tells the story of the schooner, Nancy, in the War of 1812. It had 14,121 visitors in 1972.

The Royal Navy and Military Establishments, Penetanguishene, commemorates the British establishment, 1814-56. It was reconstructed in 1972.

A major project of the Branch is the co-ordination of the reconstruction of Fort William, the North-West Company's fur-trading post and fort, Thunder Bay.

FINANCE AND ADMINISTRATION DIVISION

FINANCIAL MANAGEMENT BRANCH

Financial Report for Year Ended March 31, 1973

Statement of Revenue

Statement No. 1

For Year Ended March 31, 1973

Ministry Administration			
Sale of Maps, Publications, etc.		$ 266,594	
Rentals – Ministry Houses		260,394	$ 526,988
Land Management			
Recovery of Prior Year's Expenditures			
Canada Land Inventory	$ 16,221		
Land Acquisition	7,009		
Lac Seul Agreement	12,821		
Air Service	14,278		
Conservation Authorities	322,251		
Miscellaneous	6,986	$ 379,566	
Taxation – Mines Acreage Tax		673,804	
Royalties – Forest Protection Charges		1,900,485	
Fees and Licences – Mines		472,904	
Public Domain			
Leasings and Licensing of Lands	$ 693,336		
Gas and Mining Leases	743,246	1,436,582	
Sales			
Land and Buildings	$ 265,804		
Air Service – Flying Fees	83,581		
Recovery Fire Fighting Costs	180,979		
Sundry Sales	30,741	561,105	
Reimbursements of Expenditures – Government of Canada			
Grants - Conservation Authorities		856,530	6,280,976
Outdoor Recreation			
Recovery of Prior Year's Expenditures			
ARDA – Park Improvements	$ 155,789		
Nanticoke Agreement	15,179		
Miscellaneous	11,124	$ 182,092	
Recreation Areas			
Park Entrance and Camping Fees	$ 3,974,725		
Park Concessions	179,411		
Park Miscellaneous	22,250	4,176,386	
Historical Sites			
Fees	$ 106,181		
Sales	16,498	122,679	
Fish and Wildlife			
Hunting and Fishing Licences	$ 9,517,071		
Hunter Safety Program	81,084		
Royalties	188,984		
Confiscated Articles	29,821		
Miscellaneous – Fish and Wildlife	96,569	9,913,529	
St. Lawrence Parks			
Fees	$ 1,289,360		
Sales	730,738		
Facilities	55,221		
Miscellaneous	11,072	2,086,391	16,481,077
Carried Forward			$23,289,041

Statement of Revenue (continued)

Statement No. 1

For Year Ended March 31, 1973

Brought Forward			$23,289,041
Resource Development			
Renewable Resource Development			
Recovery of Prior Year's Expenditures			
Industrial Development Agreement	$ 18,703		
ARDA – Grants to Municipalities and Conservation Authorities	36,881		
Fresh Water Fish Marketing Act	72,198		
Logging Roads – construction costs	237,716		
Forest Access Roads – construction costs	173,862		
Miscellaneous	8,708	$ 548,068	
Forest Management			
Stumpage	$13,189,265		
Forest Management	146,230		
Forest Products	120,181		
Stock Production	209,552		
Miscellaneous Timber	21,375	13,686,603	
Reimbursements of Expenditures – Government of Canada			
Forest Management			
ARDA – Private Land Forestry	$ 190,444		
ARDA – Forest Stand Improvement	107,607		
Commercial Fish and Fur			
Resource Development Agreement	100,000	398,051	14,632,722
Non-Renewable Resource Development			
Mineral Management			
Recovery of Prior Year's Expenditures			
Mine Rescue Stations – Recovery of Operational Costs		$ 75,598	
Mining Tax		16,344,101	
Royalties		720,645	
Fees, Licenses		85,186	17,225,530
Miscellaneous			
Recovery of Prior Year's Expenditures			14,570
Total Revenue			$55,161,863

Total Expenditures

For Year Ended

Programs	Vote Total $	Activity Total $
Ministry Administration	18,506,360	
(Pro-rated by operating Activities)		
Main Office		1,653,181
Field Operational Services		3,834,861
Financial Management		1,521,683
Administrative Services		1,588,152
Information Services		885,758
Legal Services		255,154
Personnel		748,565
Junior Ranger Program		1,621,813
Research		3,065,670
Youth Corps (S.W.E.E.P.)		3,331,523
	18,506,360	18,506,360
Land Management	57,468,324	
Program Administration (Pro-rated by activities)		644,857
Environment Protection		13,554,192
Protection Service		
Communication Service		
Plant Operating and Repair		
Stock Control and Repair		
Air Service — Operating and Repair		
Extra Fire Fighting		2,999,965
Lands and Waters		13,186,301
Lands Service		
Land Use Planning		
Annuities and Bonuses to Indians		
Construction of Summer Resort Roads		
Ontario Land Inventory		
Land Assessment and Tax		
Land Acquisition		
Surveys and Engineering		5,147,274
Engineering and Surveys Service		
Construction of Dams, Docks and Dredging		
Maintenance of Dams, Docks, Locks		
Maintenance of Access Roads		
Mining Lands		990,491
Mines Service		
Recording		
Claim Inspecting		
Pits and Quarries		
Conservation Authorities		20,945,244
Conservation Service		
Grants		
	57,468,324	57,468,324

Allocated to Main Services

rch 31, 1973

Sub-Activity Total	Land Management	Environ-mental Protection	Parks & Historical Sites	Fish & Wildlife	Forest Management	Mineral Management	Conservation Authorities	Others
$	$	$	$	$	$	$	$	$
1,653,181	140,851	241,860	413,626	233,429	450,492	119,360	53,563	
3,834,861	326,730	561,040	959,482	541,483	1,044,999	276,878	124,249	
1,521,683	129,647	222,622	380,725	214,862	414,659	109,866	49,302	
1,588,152	135,310	232,347	397,356	224,247	432,771	114,665	51,456	
885,758	75,467	129,586	221,617	125,069	241,369	63,952	28,698	
255,154	21,739	37,329	63,840	36,028	69,529	18,422	8,267	
748,565	63,778	109,515	187,291	105,697	203,984	54,046	24,254	
1,621,813	105,315	117,436	827,017	91,089	480,956			
3,065,670	42,699	68,390	17,089	1,898,565	1,038,927			
3,331,523	240,919	90,907	433,339	265,186	224,334	6,277	1,737,991	*332,570
18,506,360	1,282,455	1,811,032	3,901,382	3,735,655	4,602,020	763,466	2,077,780	332,570
644,857	169,081	320,042	31,212	38,047	46,172	7,480	32,823	
8,011,608		8,011,608						
706,821	61,776	100,510	187,096	88,282	200,595	57,394	11,168	
1,275,811	111,506	181,420	337,707	159,349	362,075	103,596	20,158	
945,050	82,597	134,386	250,155	118,037	268,205	76,738	14,932	
2,614,902	180,213	1,357,224	170,805	667,146	223,053	4,276	12,185	
2,999,965		2,999,965						
2,015,004	2,015,004							
314,714	314,714							
42,600	42,600							
37,383	37,383							
433,827	433,827							
293,278	293,278							
10,049,495	31,832		8,956,678	697,268	363,717			
2,527,543	1,973,727	553,816						
885,683	411,842		177,137	296,704				
316,580	147,210		63,316	106,054				
1,417,468	95,342	136,217	128,463	167,959	889,487			
487,626	487,626							
333,000	333,000							
97,323	97,323							
72,542						72,542		
1,323,435							1,323,435	
19,621,809							19,621,809	
57,468,324	7,319,881	13,795,188	10,302,569	2,338,846	2,353,304	322,026	21,036,510	

Total Expenditures Allocated

For Year End

Programs	Vote Total $	Activity Total $
Outdoor Recreation	30,882,337	
Program Administration (Pro-rated by Activities)		1,700,239
General Outdoor Recreation		14,199,611
Parks Service		
Parks Operating		
Parks Development		
Fish and Wildlife		8,776,386
Fish & Wildlife Services		
Sport Fish Management		
Hatcheries Operation		
Wildlife Management		
Game & Fish Enforcement		
St. Lawrence Parks Commission		3,643,614
Parks Service		
Operating		
Historical Parks		2,562,487
Parks Service		
Operating		
Construction		
Resource Development	30,882,337	30,882,337
Renewable Resource Development	22,030,191	
Program Administration (Pro-rated by Activities)		707,351
Resource Production		17,576,597
Resource Service		
Stock Production		
Construction of Logging Roads		
Construction of Forest Access Roads		
Grants to Municipalities and Conservation Authorities		
Commercial Fish & Fur		
Industry Information, support and sales		3,601,161
Services		
Cruising		
Sealing		
Fish & Fur Development		
Statutory – Loans under The Fisheries Loan Act		145,082
	22,030,191	22,030,191

to Main Services *(Continued)*

arch 31, 1973

Sub-Activity Total	Land Management	Environmental Protection	Parks & Historical Sites	Fish & Wildlife	Forest Management	Mineral Management	Conservation Authorities	Others
$	$	$	$	$	$	$	$	$
1,700,239			1,188,807	511,432				
4,003,171			4,003,171					
5,856,713			5,856,713					
4,339,727			4,339,727					
2,397,845				2,397,845				
1,404,811				1,404,811				
1,007,358				1,007,358				
1,480,402				1,480,402				
2,485,970				2,485,970				
1,207,247			1,207,247					
2,436,367			2,436,367					
33,479			33,479					
614,557			614,557					
1,914,451			1,914,451					
30,882,337			21,594,519	9,287,818				
707,351	1,273	565	354	18,321	686,838			
13,703,096					13,703,096			
2,354,373					2,354,373			
273,875					273,875			
905,831	39,306	15,672	10,335	43,674	796,844			
222,374					222,374			
117,048				117,048				
1,989,624				5,037	1,984,587			
327,154					327,154			
1,042,754					1,042,754			
241,629				241,629				
145,082				145,082				
22,030,191	40,579	16,237	10,689	570,791	21,391,895			

Total Expenditure Allocated

For Year Ende

Programs	Vote Total $	Activity Total $
Non-Renewable Resource Development	9,219,064	
Program Administration (Pro-rated by Activities)		192,167
Access to Resources		3,782,970
Geological Services and Shared Exploration Costs		3,691,919
Geological Service		
Shared Exploration Costs		
Geological Surveys		
Geological Cartography		
Mines Engineering		774,112
Engineering Service		
Mines Inspection		
Laboratory Services		463,832
Laboratory Service		
Temiskaming Testing Lab		
Ontario Energy Board		232,180
Mine Rescue Training		81,884
	9,219,064	9,219,064
Northern Affairs	836,192	836,192
Total Net Expenditure	138,942,468	138,942,468
Percentage of Total		

* S.W.E.E.P. Projects manage

to Main Services *(Continued)*

March 31, 1973

Sub-Activity Total	Land Management	Environmental Protection	Parks & Historical Sites	Fish & Wildlife	Forest Management	Mineral Management	Conservation Authorities	Other
$	$	$	$	$	$	$	$	$
192,167	12,279	3,517	2,844		30,324	143,203		
3,782,970	562,652	159,991	130,478	–	1,388,473	1,541,376	-	
1,589,928						1,589,928		
469,491						469,491		
1,089,867						1,089,867		
542,633						542,633		
78,272						78,272		
695,840						695,840		
326,866						326,866		
136,966						136,966		
232,180								232,180
81,884						81,884		
9,219,064	574,931	163,508	133,322	–	1,418,797	6,696,326		232,180
836,192								836,192
138,942,468	9,217,846	15,785,965	35,942,481	15,933,110	29,766,016	7,781,818	23,114,290	1,400,942
	6.63%	11.36%	25.87%	11.46%	21.42%	5.61%	16.64%	1.01%

by the Ministry of Environment

NORTHERN AFFAIRS BRANCH

The Branch operates a small co-ordinating office in Toronto and three regional and 23 "storefront" offices in northern Ontario. Small communities in the north are served through 50 satellite offices manned on a voluntary basis by employees of other government agencies.

Northern Affairs offices aid citizens with problems related to all levels of government. They supply pamphlets and forms for many agencies and provide information on many programs.

Northern Affairs officers perform specific functions for other agencies. They hold letters of authority under several Acts administered by other Ministries.

A total of 80,958 transactions was handled in 1972, an increase of 22,466 on the year.

LEGAL SERVICES BRANCH

During the fiscal year commencing with April 1st, 1972, and ending with March 31st, 1973, Legal Services Branch prepared and processed amendments to The Crown Timber Act (by Statutes of Ontario 1972, Chapter 26); to The Provincial Parks Act (by Statutes of Ontario 1972, Chapter 27); to The Public Lands Act (by Statutes of Ontario 1972, Chapter 29); to The Surveyor's Act (by Statutes of Ontario 1972, Chapter 30); and to The Mining Act (by Statutes of Ontario 1972, Chapter 116).

The Wolf and Bear Bounty Act was repealed by Statutes of Ontario 1972, Chapter 144, and The Water Powers Regulation Act was repealed by Statutes of Ontario 1972, Chapter 28.

The Mining Tax Act was rewritten and updated by Statutes of Ontario 1972, Chapter 140, and The Wolf Damage to Live Stock Compensation Act, 1972, Statutes of Ontario 1972, Chapter 145 was enacted.

Sixty-seven regulations made under the authority of Acts administered by the Ministry and 426 orders-in-council were prepared and processed through the Branch during the fiscal year.

Two Federal-Provincial co-operative agreements dated February 8, 1972, and March 29, 1973, which provided for a two-year renewal of the co-operative agreement relating to resource management and, for the performance of a high resolution aeromagnetic survey in the Kirkland Lake area, respectively, were entered into by the Ministry during the fiscal year.

The Patents Office, which is responsible for maintenance of records of Crown land and transactions respecting, and legal dispositions of Crown land, other than dispositions under The Mining Act, processed a total of 1,526 documents during the fiscal year ending with March 31st, 1973.

ADMINISTRATIVE SERVICES BRANCH

The branch is a support group offering those administrative type services that lie outside the personnel and financial fields.

The branch is divided into two sections –

Operations and Services

Operations consists of Office Management, Purchasing and Central Supply.

Services consists of the Map Office, the Mines Publications Office, the Aerial Photo Library and the Accommodation Office.

OFFICE MANAGEMENT

This unit is responsible for the design, standardization, issuance and replacement of any of the twenty-three (23) different uniform items issued to the 1,100 regular staff, and 900 summer casual staff – (mainly parks).

The unit is also responsible for the continual updating of the Ministry's listing in telephone directories across the Province, as well as preparing input information for the Government Telephone Directory. A total of 1,400 telephone credit cards and over 3,500 identification cards were issued to the Ministry staff.

Other responsibilities include:

1. All branch personnel and accounting functions.
2. The distribution of all Government manuals and their revisions, as well as all the Ministry's policy and procedure directives and key personnel directory.
3. The Ministry equipment inventory control.
4. The reproduction facilities: (Photo-copy and Mimeograph machines)
   Approximately 160,000 photo copies and 25,000 mimeograph copies per month.
5. The management of over 200,000 active Crown land files and the several incoming documents that necessitate the recording of over 140 entries on the cross-reference index system and the retrieval of over 255 files daily.

PURCHASING

With the continuing expansion and re-organization within the Ministry, procurement activity was more varied and widespread. Over 20,000 requisitions were received and they were the basis for the issuance of 8,893 Purchase Orders, 6,739 Central Stationery Requisitions, 1,049 Printing Requisitions, 494 Government Service Requisitions, 703 Telephone Requisitions and 1,701 Central Duplicating Requisitions. Underlying these orders and requisitions were the many and varied details which are part of the purchasing function, such as searching, consulting, interviewing, telephone usage, correspondence, quotation calls customs clearance. Basically, it is a matter of supply and demand with the Purchasing Section ensuring that the Ministry's requirements are met immediately, economically, with the best quality available, and overall best value obtained for money expended.

Direction and supervision were maintained on leases and property for the Ministry throughout the Province in conjunction with the Ministry of Government Services.

CENTRAL SUPPLY WAREHOUSE

During the fiscal year, the Section received a total of 710 tons of supplies and equipment and shipped a total of 413 tons, excluding mail. Shipments were made by express, freight, transport and mail, and by internal supply to Ministry offices.

Thirty types of licences were distributed to District Offices and approximately 17,133 licence issuers on invoices. The 2,188,505 licences included hunting, angling bait fish, roll net, dip net, frog, guide, trapping, trap-line, and dog. A total of 1,278,640 Provincial Park Permits were distributed.

ACCOMMODATION OFFICE

The accommodation office is responsible for the directing and coordinating of the approval of all leasing transactions, land purchases for the erection of buildings as well as their construction and maintenance; the preparation of the Ministry master accommodation plan, the establishment of

immediate, medium and long range accommodation objectives; the coordination of the funding requirements for all general and special purpose facilities involving major and minor capital improvements; the planned program for the inspection of Ministry facilities in order to promote and improve communication between field and Head Office; the maintenance of official liason with the Ministry of Government Services in all matters pertaining to accommodation.

MINES PUBLICATIONS OFFICE

This office is responsible for the sale and distribution of geological maps and reports, circulars, industrial mineral reports, bulletins and other technical publications prepared in the Ministry.

MAP OFFICE

This office serves the public through the sale of printed maps produced by the Ministry of Transportation and Communications, lake contour map series produced by the Sport Fisheries Branch, the National Topographic Series and the Provincial Topographic Series.

AIR PHOTO LIBRARY

This library has samples of all air photographs available for the Province of Ontario. Orders may be placed at the Library for contact prints (10" by 10") enlargements made from the negatives of contact prints, and mosaics which may also be enlarged. The Air Photo Library also sells Forest Resources Inventory Maps.

RECORDS MANAGEMENT (New Section)

The Ministry is currently undertaking a study of all forms used and this study will result in an ongoing Central Forms Management Program. Initial steps were taken to create this new section.

This section will be responsible for maintaining appropriate control over the initiation, maintenance, protection, retention and disposition of all Ministry records in accordance with the policies of the Ministry and the Records Management Committee of Management Board. Submits to the committee, for approval, all proposals for microfilming Ministry records and the installation of microrecord systems. Monitors requests from Ministry offices for new or used filing equipment by investigating and justifying each request on merit and current policies.

Forms management is an activity within the records management program and a study is currently being made of all the forms used in the Ministry. This study will result in an ongoing Ministry forms management program. The aim is:

1. to contain the growth of forms and the printing and clerical costs relating to forms.
2. to simplify the flow of each form in use in a system and to simplify the preparation and handling of the form by removing all superfluous and redundant data and
3. to maintain controls over design, procurement and an inventory of forms with special emphasis on the supervision and regulation of all forms used by the Ministry staff in all locations. This Central Program will be supplemented by the establishment of Branch coordinators for the forms management program.

PERSONNEL BRANCH

DISPOSITION OF SENIOR ADMINISTRATION STAFF MARCH 31, 1973

DEPUTY MINISTER

W. Q. Macnee

ASSISTANT DEPUTY MINISTERS

L. Ringham ..... (for Northern Ontario)
W. T. Foster ..... (for Southern Ontario)
A. J. Herridge ..... (for Resources and Recreation)
J. W. Giles ..... (for Lands and Waters)

ONTARIO COMMITTEE, MAN AND RESOURCES

R. Hummel ..... Chairman

REGIONAL DIRECTORS

J. R. Oatway ..... Northwestern (Kenora)
R. A. Baxter ..... North-Central (Thunder Bay)
G. A. McCormack ..... Northern (Cochrane)
J. N. Hughes ..... Northeastern (Sault Ste. Marie)
J. S. Ball ..... Algonquin (Huntsville)
T. W. Hueston ..... Eastern (Kemptville)
A. H. Peacock ..... Central (Richmond Hill)
W. H. Charlton ..... Southwestern (London)

EXECUTIVE DIRECTORS

J. W. Lockwood ..... Division of Forests
G. A. Jewett ..... Division of Mines
K. K. Irizawa ..... Division of Fish and Wildlife
J. W. Keenan ..... Division of Parks
L. H. Eckel ..... Division of Lands
W. G. Cleaveley ..... Field Services Division
R. R. MacBean ..... Finance and Administration Division

PERSONNEL BRANCH *(Continued)*

DISPOSITION OF SENIOR ADMINISTRATION STAFF (Continued)
MARCH 31, 1973

DIRECTORS

R. M. Dixon	Forest Management Branch
J. M. Barron	Timber Sales Branch
D. H. Burton	Forest Research Branch
Dr. E. G. Pye	Geological Branch
D. A. Moddle	Mineral Research Branch
H. F. R. Davis	Mines Engineering Branch
D. R. Johnston	Wildlife Branch
K. H. Loftus	Sport Fisheries Branch
M. J. Brubacher	Commercial Fish and Fur Branch
J. D. Roseborough	Fish and Wildlife Research Branch
R. H. Hambly	Park Management Branch
T. E. Lee	Park Planning Branch
J. R. Sloan	Historical Sites Branch (Midland)
J. McGinn	Lands Administration Branch
R. J. Burgar	Land Use Co-Ordination Branch
R. G. Code	Surveys and Mapping Branch
W. L. Sleeman	Forest Fire Control Branch
T. C. Cooke	Air Service Branch
S. B. Panting	Engineering Services Branch
R. V. Scott	Northern Affairs Branch
G. H. Ferguson	Legal Services Branch
A. C. Goddard	Financial Management Branch
J. M. Taylor	Personnel Branch
J. A. Queen	Administrative Services Branch
G. A. Hamilton	Information Branch
Dr. W. R. Henson	Policy Research Branch
N. D. Patrick	Conservation Authorities Branch

DISTRICT FORESTERS

G. P. Elliot	Chapleau
E. Gillespie	Cochrane (Acting)
R. A. Balkwill	Fort Frances
W. K. Fullerton	Geraldton
D. A. Fawcett	Kapuskasing
P. Anslow	Kemptville (Acting)
M. J. Morrison	Kenora
W. B. Clarke	Lake Erie (Aylmer)
J. M. Halpenny	Lake Huron (Hespeler)
F. E. Sider	Lake Simcoe (Maple)
A. E. Walroth	Lindsay
D. J. Vance	North Bay
C. Douglas	Parry Sound (Acting)
J. A. Simpson	Pembroke
J. H. Sellers	Sault Ste. Marie (Acting)
F. L. Hall	Sioux Lookout
S. R. Hamilton	Sudbury
E. Markus	Swastika
L. M. Affleck	Thunder Bay
D. E. Gage	Tweed
A. S. Holder	White River

ONTARIO FOREST TECHNICAL SCHOOL

V. B. Collins	Acting Director

TOTAL STAFF

March 31, 1973	Regular	Probationary	Unclassified	Total
Head Office	1,337	135	316	1,788
Field	2,395	121	1,033	3,549
Total	3,732	256	1,349	5,337

Total Complement of Positions	4,113
Vacancies in Complement	186
Regular and Probationary Staff	3,927
New Employees Hired, 1972-73	318

PROFESSIONAL STAFF

March 31, 1973

Biologists	92
Economists	9
Engineers	22
Foresters	214
Geologists	48
Legal Officers	5
Mining Engineers	23
Miscellaneous	84
Total	497
Resource Technicians with Diplomas	1,491
Licensed Scalers	989

STAFF TURNOVER*

March 31, 1973

Deceased	6
Superannuated	64
Transferred	101
Resigned	143
Dismissed	6
Miscellaneous	13
Total	333

*Ratio of separations to total regular and probationary staff at March 31, 1973, was 8.10 per cent.

INFORMATION BRANCH

CONSERVATION INFORMATION SECTION

The first issue of *Aski*, a small eight-page monthly for the information of staff, appeared in June, 1972. Aski means "land" in Cree.

A newsletter was mailed weekly to 3,800 news outlets and special interest groups. The French translation went to 180 outlets. Urgent news was supplied directly to important outlets.

Ontario Outdoors, a radio series, was used by 47 stations in the Province. Program material was supplied to television stations.

During the year, information was mailed to 39,600 persons who requested assistance. The Photograph Library supplied material from a stock of 39,600 negatives and 11,000 colour transparencies.

Editorial service included the supply of information and statements to outside agencies and work on Ministry publications. New Ministry releases included the following:

GEOLOGY AND SCENERY – North Shore of Lake Huron and Region ($2.50).
THE FISHERIES OF LAKE OF THE WOODS ($1.00)
RAINBOW TROUT IN THE GREAT LAKES ($1.00)
BIRDS OF ALGONQUIN PROVINCIAL PARK ($0.75)
BOW HUNTING FOR DEER
WINTER RECREATION ON PUBLIC LANDS
PLANTATION MANAGEMENT ($0.50)
OUT OF THE WOODS (folder)
FORESTRY IN ONTARIO (Series of 10 booklets)
FOREST FIRE CONTROL IN ONTARIO

CONSERVATION EDUCATION SECTION

The Section prepared exhibits for 70 fairs and shows where the Ministry area was staffed by Districts. It prepared and managed Ministry exhibits at the Canadian National Exhibition in Toronto, Central Canada Exhibition in Ottawa, Western Fair in London, Canadian Lakehead Exhibition in Thunder Bay, International Plowing Match in Sebringville, Royal Winter Fair in Toronto, and Canadian National Sportsmen's Show in Toronto.

The Film Library added 20 films to head office and field office film libraries to bring the library's total to 330 titles with two or more prints of many of the titles. During the year, approximately 1,500 films were loaned to field offices.

Illustrated lectures were given on many aspects of the Ministry's activities to schools and youth organizations, church and service groups, and conservation associations.

ACCIDENT CONTROL SECTION

During the year, driver improvement training and testing was extended to staff in all districts.

Employees were given the safety training applicable to their particular working hazards.

North Bay District won the Safety Trophy with an injury frequency rate of 5.6.

The number of certified Hunter Safety Training instructors increased by 20 to 1,373.

In Algonquin and Killarney Provincial Parks, 62 canoeing-camping demonstrations were given by the Ontario Safety League under the Ministry's sponsorship.

Workmen's Compensation costs were $330,231.59, including pensions and administrative charges. Compensable claims number 1,065.

POLICY RESEARCH BRANCH

Policy Research is a new Branch, established in September, 1972, from elements of former Branches. It reports directly to the Deputy Minister. Its responsibilities are as follows.

1. Ministry liaison with other Ministries and the central agencies of Government.
2. Co-ordination and regulation of activities related to environmental quality. Ministry responsibilities toward Environmental Impact Review Board.
3. Conduct and co-ordination of research basic to policy formulation in fields such as proposed water diversion areas, proposed industrial development, unorganized areas in north, resource prices, resource transportation, resource allocation, and recreation demand and supply.
4. General supervision of research and development.
5. Development of a modern information system, and the operation of Ministry libraries.
6. Technical background support in biometrics, economics and various biological disciplines.
7. Study of experience elsewhere, notably in Soviets.

DIVISION OF LANDS

LANDS ADMINISTRATION BRANCH

The Branch is responsible for policy and objectives in the administration of Crown lands (public and mining) in Ontario, and for acquiring private lands for Ministry purposes.

LAND ACQUISITION SECTION

The Section is responsible for acquiring private lands in support of programs such as public recreation and timber management. Since 1962, some 500,000 acres of land have been purchased, and some 15,000 acres have been transferred to the Ministry from other Provincial agencies. Recent purchases related to Niagara Escarpment lands, the Wasaga Beach area, and Bronte Creek Provincial Park.

TITLE SECTION

The Section prepares and engrosses the title documents required to dispose of Crown lands under The Public Lands Act and The Mining Act. In addition, the Section levies mining acreage tax and carries out the procedures required to effect forfeiture to the Crown of alienated mining lands when the owners of such lands default.

Mining Lands Section

Under The Mining Act, the Section prepares rulings for leases and Exploratory Licences of Occupation; disposes of land for sand and gravel purposes, and collects royalties for salt and sand and gravel removals; withdraws lands from disposition; and collects and assesses all geophysical, geological, geochemical and other technical reports. With a budget of $50,000 in 1972-3 for the rehabilitation of depleted pits and quarries, approximately 26 pits were rehabilitated.

Under The Beach Protection Act, all commercial removals of sand and gravel (except by municipalities) from beaches, banks or waters of lakes and streams are licensed by the Section following consultation with Fish and Wildlife field offices, Ministry of the Environment and the Federal Department of Transport. Regular inspections are made of licensed areas to ensure that operations cause no significant erosion or damage to the ecology.

Public Lands Section

In the administration of public lands, other than mining lands, the emphasis is changing from land disposition to management. Land management includes:

Allowing the public to use and enjoy public lands and waters wherever possible;

Minimizing conflicts between user groups;

Reserving areas for future public or government purposes to protect unique or sensitive features or to preserve the natural wilderness;

Zoning areas for or against certain uses;

Controlling garbage, litter, dumping and dredging; and

Removing unauthorized occupations of public land.

In territory that is not municipally organized, control is exercised over uses and development of privately owned land through the designation of Restricted Areas under Section 17 of The Public Lands Act. Twenty-two areas, comprising more than 12,000 square miles, have so far been designated.

When land is to be disposed of, the Section prescribes terms and conditions in accord with land-use plans for the area. In unorganized territory, leasehold tenure is usually prescribed.

Price is based on the appraised market value of the land.

Annual rent is derived from the Regulations or based on seven per cent of the land's value.

Improvement requirements are imposed to ensure quality development, for the purpose for which the land was granted, within a specified time.

Land is disposed of by sale, lease, easement, licence of occupation, or land use permit, or by vesting order when transferred to another agency of government.

In the case of cottage lots for private use, tenure is by lease only. These lots are available only in registered subdivisions and may not be leased to non-Canadians until they have been available for lease to Canadians and landed immigrants for one full year.

LAND USE CO-ORDINATION BRANCH

The Branch was established in 1972 to give added emphasis to the Ministry's concern with land use and land-use planning.

LAND USE PLANNING SECTION

In the first phase of land-use planning, the Ministry is preparing, or assisting other Ministries to prepare, land-use plans for specific areas. In 1972, the Ministry was involved in planning at Ignace, Sault Ste. Marie North, Maple Mountain, Lake Temagami, and the Regional Municipality of Muskoka, with public hearings on power line locations most notably the Nanticoke-Pickering line.

During the year, the Section was assigned the responsibility of ensuring that comprehensive Provincial and Regional land-use plans were prepared by 1975. This led to the second phase of land-use planning. A document, *Guidelines for Land Use Planning,* was prepared and published in 1972. Throughout the year, field staff gathered data relevant to planning.

LAND USE LIAISON SECTION

Many meetings and training sessions were held in 1972 with head office and field staff and with the staff of all other

Ministries interested in land use. The purpose was to explain in detail the need for comprehensive land-use planning and the methods of planning, and to co-ordinate the policies of individual agencies.

MUNICIPAL PLAN REVIEW SECTION

In 1972, the Section was assigned the responsibilities of the previous Conservation Planning Section in Conservation Authorities Branch. Staff were obtained and trained.

A total of 698 subdivision, 60 severance and 20 condominium proposals were reviewed, and recommendations concerning conditions of draft approval were prepared. In addition, 113 draft municipal official plans, and/or amendments to approved official plans, were reviewed and conditions of approval recommended.

SURVEYS AND MAPPING BRANCH

The Surveys Section performed, or obtained through private surveyors, surveys of a variety of Crown lands prior to their disposal under The Public Lands Act and The Mining Act. Township boundaries resurveyed totalled 300 miles, and restored under OSEP, 174 miles.

The Cartography and Inventory Sections produced geological, planimetric and thematic maps as a result of field surveys undertaken in various Ministry programs.

The naming of geographical features was performed by the Ontario Geographical Names Board.

In connection with the interpretation of space and airborne pictures, a Federal-Provincial link was established, and provision was made for an Ontario centre for remote sensing within the Ministry.

FIELD SERVICES DIVISION

FOREST FIRE CONTROL BRANCH

A total of 1,573 forest fires burned over 65,458 acres in Ontario during the 1972 fire season. An additional 31 fires occurred within the fire district but outside the area of intensive protection. These fires burned 13,284 acres.

Two high fire loads were experienced. The first, from the middle of May to the first week in June, saw province-wide fire occurence and accounted for 64 per cent of the season's fires and 91 per cent of the acres burned. Twenty-three large fires were experienced, and some equipment and manpower shortages occurred. The peak was reached on May 28 when 60 new fires made a total of 156 fires burning on that day.

A more localized situation occurred during the first week of July in Geraldton and Sioux Lookout Districts when approximately 280 fires were experienced.

The remainder of the fire season was exceptionally quiet.

Lightning was again the major source of fire ignition. It accounted for 33 per cent of 1972 fires and 78 per cent of the area burned.

Again in 1972, three Avenger fire bombers were contracted and positioned at the Dryden Fire Centre Northwestern Region to perform initial attack and support functions with long-term fire retardants. This land-based operation was meshed with the over-all fire attack system and worked well.

On the basis of two year's experienced with the Tracker fire bomber, this aircraft was selected to be the land-based air attack aircraft in the Ministry fleet. Five more were acquired for the 1973 fire season.

FIRE PREVENTION

Five fire prevention pamphlets, Debris Burning, Fire Prevention, Children and Fire, Smoking, and Campfires, were published and distributed to the public.

TRAINING

Two four-week courses were given in basic fire suppression (Fire Suppression I). A total of 41 staff and two National Park personnel completed the course.

The third annual advanced fire management course (Fire Suppression II) was given to 24 staff.

DEVELOPMENT WORK

Field evaluations of various items of forest fire control equipment were made during the 1972 fire season. These included: field test of synthetic fire hose; operational evaluation of the Gorman-Rupp pump; modification of fire-line camp gear; and modification of fire hose laying technique and packaging methods.

AIR SERVICE BRANCH

The purchase of five Grumman Tracker aircraft increased the Ministry fleet to 48 aircraft, operated out of 20 bases of which eleven were open the year round.

During the year, Ministry aircraft flew a total of 14,551:15 hours and delivered loads that totalled 27,137,880 pounds.

Leased helicopters flew a total of 3,032:10 hours.

Twenty-eight mercy and emergency flights were made to rescue ill and injured persons from isolated locations. These flights accounted for 42:25 flying hours.

ENGINEERING SERVICES BRANCH

Engineering Services is a new Branch formed from elements of the former Surveys and Engineering Branch in the Ministry reorganization which became effective on September 1, 1972.

The Branch supplied support in the aspects of Ministry programs requiring professional engineering, engineering technology, and construction expertise.

The engineering projects related to water use and management were carried out by means of pre-engineering surveys, feasibility studies, designs, plans, specifications, consultation, reports, employment of engineering consultants, and the construction of dams, docks, navigation locks and other hydraulic structures and facilities.

The Branch carried out a program of inspection and maintenance on some of the 265 Ministry-owned dams along with improvements to flow channels, dredging and removal of floatwood.

An extension service to the public on erosion control was expanded to cope with the increased erosion and flooding resulting from a combination of high water levels on the Great Lakes and several severe storms, notably those of November 13-14, 1972, and March 17, 1973.

Co-ordination of the Ministry sign program was implemented in accordance with the policy established by the Sign Committee.

Consultation was provided for the construction and maintenance of forest access roads, and assistance is given to the Northern Ontario Resource Transportation Committee secretariat.

The administration of The Lakes and Rivers Improvement Act required the examination and approval of all proposed dams in the Province, the investigation of complaints, and special studies of water levels and shorelines.

Under the Major Capital construction program, the Branch provided liaison between the Ministry of Government Services, Management Board and the appropriate branches, districts and regions.

Maintenance and minor construction of buildings and other facilities was carried out under the Minor Capital works program.

CONSERVATION AUTHORITIES BRANCH

The Branch co-ordinates assistance to Conservation Authorities which include grants (for capital projects and administration of Authority programs), technical advice, watershed studies and reports. The Branch reports to the Assistant Deputy Minister for lands and waters.

Funds contributed through the Branch in 1972-3 were $23,071,983, made up of $19,516,402 for capital projects and administration, $1,900,740 in winter works transfer payments, and $1,654,841 in SWEEP transfer payments, and an additional $378,246 in Parks Assistance Act payments made directly to the municipalities.

Some of the more important dams, reservoirs and channel improvements either in process of construction or completed in 1972-3 were at Binbrook (Niagara), High Finch (Metro Toronto), Woolwich (Grand River), Third Depot (Napanee), Hilton Falls and Fourteen Mile Creek (Halton), Head Street (Sydenham Valley), and East Davignon (Sault Ste. Marie).

Both Toronto Metro and Hamilton Region Authorities began waterfront development plans during the year.

Large conservation areas undergoing development in 1972-3 were at Christie (Hamilton), Brantford (Grand River), Lake Whittaker (Kettle), and the Mill of Kentail(Mississippi).

THE MINING COMMISSIONER

The Mining Commissioner presides over a tribunal which exercises the judicial and administrative functions conferred upon it under The Mining Act, The Mining Tax Act and The Beach Protection Act. During the past fiscal year, the following matters were determined and disposed of.

Orders extending time for performing work or applying and paying for leases	874
Orders extending time for tagging	6
Orders authorizing special renewal of licences	52
Miscellaneous orders and judgements	65
Total Number of Orders	997

REVENUE DERIVED FROM FILING EXTENSION ORDERS	No. of Claims	Revenue
Prior to Default	9,609	$48,045.00
Relief from Forfeiture	1,203	12,030.00
Prior Tagging	6	30.00
Total	10,818	60,105.00

During the year, sittings were held at Toronto, Kirkland Lake, Thunder Bay, Sioux Lookout and Timmins.

ONTARIO ENERGY BOARD

During the past year, the Board held more than one hundred public hearings, usually in Toronto. Hearings were also held at Mount Forest, Cayuga, Sarnia, Windsor, Chatham, Woodstock and Guelph.

Board activities during the year included the granting of leave to construct pipe lines, authority to expropriate pipe line rights-of-way when easements could not be negotiated, certificates of public convenience and necessity for the distribution of gas, and approval of the drilling of wells for oil or gas in designated gas storage areas.

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Annual Report of the Minister · 1974

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ANNUAL REPORT

**OF THE MINISTER
OF NATURAL RESOURCES
OF THE PROVINCE
OF ONTARIO
FOR THE FISCAL YEAR
ENDING MARCH 31, 1974**

TO HER HONOUR,
The Lieutenant-Governor
of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR
The undersigned begs respectfully to present to your Honour, the Annual Report of the Ministry of Natural Resources for the fiscal year beginning April 1, 1973, and ending March 31, 1974.

Leo Bernier

LEO BERNIER
Minister

Ontario

Ministry of
Natural
Resources

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Related detail of interest is reported in The Mining Review, 1973, and Statistics, 1974.

DIVISION OF FORESTS

FOREST RESEARCH BRANCH

Research provided a variety of scientific and technical information for use in the management of the forest resources of Ontario. Our research scientists are investigating such aspects as: the culture and utilization of hybrid poplar, assessment of forest fire retardants, soil nutrient and forest growth relationships, response to fertilizers, the importance of seed source, post-planting development of seedlings, and ecological and physiological factors affecting the quality of hardwoods.

In southern Ontario, practical techniques are being developed to improve the forested areas for social and economic use. In northern Ontario, new programs have begun in the important spruce-balsam, fir-aspen forests to improve regeneration of cut-over stands.

FOREST MANAGEMENT BRANCH

The objective of the Branch is to produce optimum, continuous, industrial, social and environmental benefits from public forests and to encourage and assist similar production on private lands in Ontario.

TREE SEED

Inventory, June 1, 1973	2,891,000,000 viable seeds
Distributed 1973–74	787,000,000 viable seeds
Collected	4,960 hectolitres

TREE IMPROVEMENT

Plus trees, collected	5,590 scions
planted	4,224 grafted trees
Seed Collections Areas*	1,400 acres
Seed Production Areas	540.5 acres
Seed Orchards	168.0 acres

**A new term used to describe superior stands of jack pine which are reserved and logged periodically to supply the seed required, and regenerated with the same seed source to maintain them as gene pool reserves.*

PLANTING STOCK

Distribution, conifers	63,437,620
hardwoods	1,924,775
TOTAL	65,362,395
Production Targets Seeded	79,100,000

DEVELOPMENT

The Ministry of Natural Resources licensed the manufacture of the Ontario Mark III Planting Machine to a local manufacturer. Three units were purchased by the Province for extensive field testing.

A feasibility study was also completed on converting a cigarette making machine to a machine for making and loading seedling containers.

PRIVATE LANDS

The Woodlands Improvement Act	No. of Agreements	Acres
New Agreements activated 1973–74	614	12,224
Program totals to March 31, 1974	3,249	161,306
Number of Trees Planted		8,508,130

ADVISORY SERVICES

1. Number of public inquiries serviced	38,318
2. Number of field inspections made	5,842
3. Number of forest management programs prepared	555
4. Area for which management programs prepared	38,314 acres
5. Trees purchased and planted by private landowners	10,201,430
6. Timber marked for harvesting:	
Sawtimber	2,818,243 cu. ft.
Pulpwood	8,026 cords
7. Activities with youth groups	251 groups
8. Public education activities and services	1,281 items
9. Days of forestry instruction provided to schools, colleges, universities	166 days

AGREEMENT FORESTS

Agreements with	Acres Added	Acres Released	Total
1 Government of Canada			3,532.00
24 Conservation Authorities	943.57		91,962.54
22 Counties	2,073.00	45.00	147,174.03
11 Townships			3,229.24
2 Regional Municipalities	1,350.00	30.00	8,755.08
60 TOTALS	4,366.57	75.00	254,652.89

PEST CONTROL

The most destructive of all the forest insects and diseases in 1973 was the spruce budworm which infested balsam and white spruce trees on a gross forested area of almost 19 million acres. Most of this acreage was in the north-central, north-eastern, and south-eastern portions of the province. After a careful assessment of values to be protected, spraying operations to control the insect were confined to approximately 88,300 acres of Crown land. The insecticide used was Zectran at a rate of 1.2 ounces of active material per acre.

Other pest problems requiring control treatments were the white pine weevil, several species of sawflies of pines and spruce, white grubs, the blister rust of white pine, the annosus root rot, and mice. A total of 12,000 acres were treated to control these problems.

CLASSIFICATION OF CUT-OVER ON CROWN AND PATENT LAND, 1973–4

Areas in Acres

Cutting method	Re-generation Required	Satisfactory Natural Re-generation	Re-generation not Required	Total
Clear cut	271,906	95,345	—	367,251
Selection Cut	—	76,390	—	76,390
Partial Cut	—	—	30,845	30,845
TOTAL	271,906	171,735	30,845	474,486

REGENERATION AND TENDING, 1973–74 — **Areas in Acres**

Treatment	Crown Land	Agreement Forests	W.I.A.	Sub-Total	Other Patent Lands	Total
REGENERATION						
Planting Nursery Stock	60,394	2,197	10,512	73,103	4,977	78,080
Container Stock	4,847	—	—	4,847	—	4,847
Seeding	25,094	5	—	25,099	—	25,099
Modified Harvest Cut	20,984	347	549	21,880	—	21,880
Scarification	9,126	—	—	9,126	—	9,126
Seed Trees	11,173	—	50	11,223	—	11,223
TOTAL	131,618	2,549	11,111	145,278	4,977	150,255
TENDING						
Hand Cleaning	13,353	1,931	44	15,328	—	15,328
Herbicide Spraying	8,815	877	107	9,799	—	9,799
Thinning Improvement Cuts	29,079	5,349	3,961	38,389	869	39,258
Pruning	3,067	1,112	181	4,360	50	4,410
Fetilization and Drainage	313	276	—	589	—	589
TOTAL	54,627	9,545	4,293	68,465	919	69,384
TOTAL AREA TREATED	186,245	16,978	21,683	302,426	15,732	318,158
Site Preparation for Seeding, Planting or Modified Harvest Cutting	71,933	699	2,149	74,781	25	74,806
*Tree Marking	77,520	4,884	6,279	88,683	9,836	98,519

**Marking, previously included in tending, is shown separately to avoid distortion of total tending and total area treated.*

TIMBER SALES BRANCH

SCALING

Scaling determines the volume of wood cut on Crown land and Agreement Forests. It is the basis for revenue and statistics related to primary wood-using industries. New measurement techniques are being continually developed. The most promising at the moment is weight scaling.

LICENCES

Areas under Crown Timber Licence, March 31, 1974	Square Miles
Under Sect. 2 C.T.A.	284.9
Under Sect. 3 C.T.A.	91,971.5
Under Sect. 5 C.T.A.	37.5
TOTAL	92,293.9

PULP CHIPS

Ontario 1973	PRODUCTION No. Mills	PRODUCTION Quantity b.d.t.	CONSUMPTION No. Mills	CONSUMPTION Quantity b.d.t.
Ontario	99	1,363,815	15	1,166,783
Quebec	—	—	6	142,792
U.S.A.	—	—	5	54,240

MANAGEMENT PLANS

Forest Management Plans provide the broad framework within which forest operations are carried out. More detailed operating plans (for shorter time periods) identify the stands to be cut, regenerated and tended, and the road and other improvements requied.

STATUS OF MANAGEMENT PLANS
(Areas in Square Miles)

	Crown No.	Crown Area	Company Agreement No.	Company Agreement Area	No.	Area
Approved Standard Plans	38	28,507	2	6,653	24	188
Plans being prepared and revised	33	48,267	29	72,694	36	201
Inventory required	8	9,041				
Inactive and inaccessible or not under plans	9	24,292				
TOTAL	88	110,107	31	79,347	60	389

VOLUME AND VALUE OF WOOD CUT FROM AGREEMENT FORESTS, 1973–4

Sawlogs	287,966.53 cu. ft.	$ 64,304.85
Poles and Posts	12,757.71 cu. ft.	4,955.31
Fuelwood	1,279.99 cords	7,434.04
Pulpwood	20,436.58 cords	93,815.94
Miscellaneous		5,752.79
TOTAL	2,146,632.69 cu. ft.	$176,262.93

VOLUME AND VALUE OF WOOD CUT FROM CROWN LANDS, 1973–4

Species	Cubic Feet	Stumpage Value
White Pine	19,213,314.45	$ 1,210,304.10
Red Pine	6,568,712.94	399,792.85
Jack Pine	157,509,044.44	3,916,287.43
Mixed Pine	6,788.10	234.93
Spruce	241,631,552.65	8,078,805.95
Hemlock	2,161,631.51	57,100.68
Balsam	14,868,360.25	324,267.62
Cedar	466,206.62	28,472.20
Tamarack	60,151.61	1,289.83
Mixed	43,440.97	826.86
TOTAL SOFTWOODS	442,529,203.54	$14,017,382.45
Maple	7,575,704.46	$ 427,084.74
Yellow Birch	3,991,489.16	366,669.44
White Birch	2,638,551.16	51,897.14
Oak	362,911.21	20,923.26
Beech	450,766.53	13,212.63
Ash	63,368.98	3,350.48
Elm	122,136.08	7,133.86
Basswood	393,212.86	28,972.75
Butternut	785.91	102.10
Black Cherry	31,668.46	1,374.10
Poplar	31,495,490.12	348,347.37
Mixed	16,029,150.07	193,459.19
TOTAL HARDWOODS	63,155,235.00	$ 1,462,527.06
TOTAL WOOD CUT	505,684,438.54	$15,479,909.51

DIVISION OF MINES

MINERAL RESOURCES BRANCH

The Mineral Resources Branch is a newly organized unit in the Division of Mines. The prime objective of the Branch is to assure the orderly development and optimum use of provincial mineral resources in line with the Ministry's policy of broadening the base of mineral development and processing in Ontario. The most important function of the Branch is to provide the Minister with in-depth researched information and mineral policy options as well as to ensure equitable mining tax assessments.

Major areas of responsibility for the Branch have been established as follows:

(a) Determination of an inventory of the province's mineral resources and its commercially viable reserves;

(b) Continuing analysis of the reserve position against present and projected world supply and demand for minerals;

(c) In-depth studies of mining and exploration companies and their decision-making process;

(d) In-depth mineral commodity studies on each mineral element in provincial reserves with priorities set for nickel, copper, zinc, iron ore, uranium and precious metals;

(e) Economic studies of metal and mineral markets and factors affecting Ontario's output;

(f) Preparation of plans to stimulate mineral resource development;

(g) Analysis of the effectiveness of present public policies in respect of mineral resource development;

(h) Federal-Provincial liaison on mineral resource problems;

(i) Studies on economic behaviour of multi-national mineral resources companies;

(j) Long-term planning of resource development; and

(k) Development and administration of mineral resources policies.

(l) Detailed analysis of the existing system to develop a sound mineral taxation policy.

(m) Administration of The Mining Tax Act.

Petroleum Resources Section

The Petroleum Resources Section is responsible for a wide range of activities associated with the exploration, drilling and production of oil and gas in Ontario. These functions include the conservation and proper development of Ontario's petroleum resources, environmental controls, and safety. Scientific data, both geological and engineering, are collected and processed for all wells drilled in the province, and such data are used to prepare various publications, reports and maps to encourage the proper and equitable development of Ontario's petroleum resources.

The Section's staff of nineteen includes qualified geologists, reservoir engineers and inspectors. As an integrated regulatory and scientific agency, it is able to advise Government on all problems arising from legislation, and the wide variety of technical and scientific problems related to oil and gas exploration and development in both Ontario and other areas of Canada.

Under authority of The Petroleum Resources Act, all information collected in the drilling of wells must be submitted to the Section. This information is submitted as analyses, engineering and geological reports, and reports required of the various licenses issued. All data are validated by the inspection staff, and interpreted and transcribed by the geologists and engineers into more readily accessible forms by way of hard copy documents, microfilm and computer output for both internal and industry use.

The Section, through its draughting unit, also compiles and constructs 15-minute quadrant maps for southwestern Ontario showing all oil and gas wells and regulation spacing areas. These are updated weekly and made available to industry.

The geological staff and the repository facilities are located in London, and during the year were administratively placed within the regional concept, although their technical functions remain under main office direction.

Core and drill-cutting samples from all wells drilled are forwarded to the repository where they are processed, examined and stored. The repository is utilized by the petroleum resources geologists and engineers (to research material for various publications and annual reports), and by industry and universities.

To the end of 1973, the section had issued 2,379,182

acres under license in Lake Erie, and 159,459 acres under production leases to a total of seven operators.

In the Hudson Bay lowlands, three operators had 6,825,977 acres under disposition.

During the year, 127 wells were drilled, including 42 wells in Lake Erie. Off-shore operations are closely scrutinized, and the inspection staff normally operates on a 24-hour basis, staying aboard the drilling vessel during much of the operation.

Since 1858, more than 100,000 oil and gas wells have been drilled in Ontario, and many have never been properly plugged. As a result, the inspection staff through government funding, administers the plugging of hazzardous wells on priority basis, and in turn work closely with T.E.I.G.A. and other agencies in this regard.

All data and information acquired during exploration, drilling and production operations are submitted on a monthly or annual basis as required by regulation. Much of the statistical data and other pertinent information from Statistics Canada are processed for the Section by the Energy Studies Section of the Ministry of Energy. These data are in turn published in the Section's annual report.

Metallic Minerals Section

The main objective of the Metallic Minerals Section is to provide effective metallic mineral policy options for the Division of Mines.

The secondary objective is to provide effective and practicable solution alternatives to metallic minerals problems as they arise.

Detailed analysis of metallic mineral commodities produced in Ontario are being prepared. These will review supply and demand relationship, price movements, technology, uses and problems on a world-wide basis since minerals and metals are sold on world markets.

Economic and statistical research as an input to the development of mineral policy options. Analyses of the effect of mineral policies on labour and capital markets.

A considerable percentage of the Section's time is expended in detailed analysis and recommendation of alternative solutions for problems that affect the metallic minerals sector of the economy.

These problems range from assisting on task forces and committees to review of external consultant's reports and problems related to The Ontario Mining Act and The Mining Tax Act. Many of these problems command evaluation of the commodities involved and as such form the initial input into broader commodity studies.

Liaison is being established with the federal government and the U.S.A. and state governments on mineral matters of mutual concern. As well, there is continuing contact with mining companies and other public and private agencies.

Plans are underway for a mineral resource inventory of the province which will be assembled in conjunction with Geological Branch. This will be a long-term study and eventually form an important part of the data base for analysis and formulation of policy options.

Industrial Minerals Section

The Industrial Minerals Section has two major functions: Providing the input necessary to fulfil the role of the Branch in presenting industrial (non-metallic) minerals policy options for the Province; and administering The Pits and Quarries Control Act.

The policy function will be developed on a progressive basis to deal in turn with each industrial mineral and rock commodity by implementing the processes outlined as major areas of responsibility for the Branch.

The Section's function in administration of the Act involves a dual role. On the one hand, consultation and guidance are provided to the Ministry's field offices which, through their pits and quarries inspectors, are responsible for implementing the requirements of the Act. On the other hand, the Section processes applications for, and renewals of, pit and quarry licenses received through the field offices for recommendation to the Minister.

During 1973, a further 53 townships in southern Ontario were designated by the Lieutenant-Governor-in-Council under section 2 of the Act, bringing the total to 121 townships. Understandably, the majority of staff time has been taken in liaison with the inspectors, processing the many applications, explaining the Act and its purposes to applicants in personal and telephone interviews, and participating in various relevant meetings.

By the end of 1973, a total of 483 licences had been issued.

Commodity Analysis Section

Commodity Analysis Section has been established from elements of the former Mineral Economic section. Its responsibilities are as follows:

1. Annual survey and preparation of open-file reports on mineral industry operations and mineral industry statistics.

2. Collection and analysis of national and international data on all metals and mineral commodities, prices, markets, consumption trends tariffs, duties and export-import restrictions.

3. Publication of a monthly mineral information bulletin for internal use.

In 1973, publication of the annual report on mineral industry operations and the annual statistical report on mineral production of Ontario was suspended, but, the information and the statistical data previously published in these reports have been made available to the interested public on an open file. By the end of the year, the open data file on mineral industry operations was completed for the years 1971 and 1972, and the statistical data on mineral production of Ontario were tabulated for 1971. There were delays in reporting by some responding mining companies, but statistical data for 1972 has been made available by the end of June 1974.

The Section continued publication of a mineral information bulletin for internal use and embarked on a major project of creating and maintaining a loose-leaf reference handbook giving a total run-down on each Ontario mineral commodity in a world-wide context, and on converting the 1961–1972 output data to the metric system.

The Section also provided services in the field of mineral economics and statistics to Ministry staff, other government agencies and the interested public.

Mine Assessment Section

The mine assessor administers The Mining Tax Act and develops options for provincial mineral taxation policy.

In the past fiscal year, the producing mines in Ontario were taxed at the rate of fifteen per cent on the profits from mining as defined under the Act if the profit exceeded $50,000.

Sixty-two assessment notices were issued during the year.

The Section is currently studying ways and means to implement the new policy of the Government in respect of taxation of operating mines as outlined in the current Provincial Budget.

GEOLOGICAL BRANCH

The Geological Branch provides information on the geology and mineral resources of Ontario to encourage exploration and development of mineral wealth by the mining industry and as a basis for land-use and transportation-route planning and the development of non-renewable resource utilization policy.

Geological, geophysical and geochemical surveys identify favourable locations for mineral and aggregate deposits and provide increased knowledge and understanding of the geological history of Ontario. Existing data on mineral deposits are being compiled, and new studies have been initiated. Educational programs and published reports and maps are available to the public.

The Branch administers the Mineral Exploration Assistance Program (MEAP) whereby the Government reimburses an individual or company one-third of the cost of an approved exploration expenditure (maximum $100,000) in the areas of Kirkland Lake, Cobalt-Gowganda, Geraldton-Beardmore, and Red Lake.

On April 1, 1973, the Branch was reorganized to encompass its greater role in planning resource management.

PRECAMBRIAN GEOLOGY SECTION

During the summer of 1973, 22 field parties surveyed rocks of the Precambrian Shield. A total of 1,380 square miles was mapped at a scale of one inch to ¼-mile for publication at one inch to ½-mile. Four reconnaissance and compilation projects covering 1,760 square miles were carried out for publication at one inch to one mile. Operation Ignace-Armstrong, a helicopter-supported reconnaissance project, covered more than 16,000 square miles for puplication at one inch to four miles. Four compilation sheets (one inch to four miles) were under revision. On the basis of field area location, the geologists of the Section are divided into North Archean, Central Archean, South Archean and Proterozoic mapping groups.

PHANEROZOIC GEOLOGY SECTION

During the summer of 1973, seven field parties carried out mapping projects. One Paleozoic field party completed the mapping of the Niagara Escarpment from Hamilton to Collingwood. Five Quaternary field parties mapped in the Wingham-Palmerston, Dunnville, St. Mary's, Collingwood, Alexandria and Timmins areas. Twelve mineral resource surveys were completed at the request of municipalities.

GEOPHYSICS/GEOCHEMISTRY SECTION

Geophysical surveys carried out in 1973 were two magnetic surveys in Calvert and McCart Townships and in the northern Sturgeon Lake area, and a gravity survey in the Cobalt-Englehart area. Two geochemical projects in the Timmins-Kirkland Lake area surveyed ultramafic rocks and Quarternary deposits in areas of base metal mineralization. The Section also planned and coordinated a contract survey for kimberlite (potential diamond-bearing rock) indicator minerals in a 5,000-square-mile area of the James Bay lowlands. Development of computer-based techniques for the processing and interpretation of geophysical and geochemical data was continued.

MINERAL DEPOSITS SECTION

The Mineral Deposits Section was created April 1, 1973, to study ore deposits of both the metallic and non-metallic minerals, their distribution, geology, reserves and potential. An important role is to provide reserve data and resource estimates for use in government planning particularly for land use and transportation corridors and as background for studies by the Mineral Resources Branch. A staff of six was recruited and oriented during the year. The areas of responsibilities are (1) uranium and thorium, (2) nickel-copper, (3) copper-zinc ores of the greenstone belts, (4) iron and miscellaneous metals, (5) gold-silver deposits, and (6) the industrial minerals. Methods for predicting mineral potential on both qualitative and quantitative bases are being examined and developed. Initial studies for publication include metallogenic maps for uranium, and iron; metal deposit distribution maps for gold and nickel, a revised edition of the Mineral Map of Ontario, preparation of the final volume of Gold Deposits of Ontario, and an industrial minerals study on the Moose River Basin.

SPECIAL PROJECTS SECTION

Government payments under the Mineral Exploration Assistance Program (MEAP) for the fiscal year were $495,427 with a total expenditure in the past three years of $1,095,584. Section activities included a study of mineral exploration trends and expenditures in Ontario, and a listing of occurrences of float, placer gold and indicator minerals for kimberlite.

REGIONAL AND RESIDENT GEOLOGICAL PROGRAM

During the 1973–4 fiscal year, Regional and Resident Geologists offices were maintained at Kenora, Red Lake, Thunder Bay, Sault Ste. Marie, Sudbury, Timmins, and Kirkland Lake. New offices were established at Sioux Lookout, London and Richmond Hill.

Regional and Resident Geologists are part of the field organization, responsible administratively to the Region and technically to Geological Branch. Their principal function is to provide a consultative service to the Government of Ontario, the people of Ontario, and the mining industry on the geology and mineral deposits of the Province.

GEOSERVICES SECTION

Reorganization of the Geological Branch on April 1, 1973, amalgamated several sectional units into the Geoservices Section.

The *Scientific Review Office* is responsible for the scientific review, editing and publication of all geoscience reports and preliminary maps. The following publications were processed during the year.

Geological, Geophysical, Industrial Mineral Reports	9
Open File Reports	19
Circulars, Bulletins, Miscellaneous Papers and Publications	10
Coloured Geological Maps	19
Preliminary Maps	78
Geological Compilation Maps	3
Index Maps	15
Reports in press and under review	36

Several hundred slides and displays by the drafting unit.

The *Geoscience Data Centre* is responsible for the researching, compilation and computer processing of geoscience data on Ontario's mineral deposits as well as indexing publications by the Geological Branch and reports submitted for assessment work credit. During the year, 5,000 documents were indexed for the computerized Ontario Index to Geoscience Data. These consisted of assessment work reports, MEAP reports and Branch geoscience publications, all for the period 1971–3. Computer retrieval from the Ontario Index was used to produce a List of Publications, 1966–72, and an Index to 1972 Assessment Work Reports, both released to the public. One hundred and sixty Mineral Deposit Records were compiled for base metal deposits with reserves or production in the Sudbury, Cochrane and Timiskaming districts.

The *Geoscience Information Office* conducts classes of instruction on geology and exploration technology and prepares information pamphlets and guidebooks on the geology of Ontario. A variety of mineral education courses were conducted, and 76 Junior Ranger camps were visited during the summer.

The *Assessment Files Research Office* operates, for public use, a library containing all technical surveys filed for assessment credit, prospectuses and summary reports received from the Ontario Securities Commission and technical surveys filed in accordance with MEAP. During the fiscal year, 3,138 enquiries were received, 6,562 control maps were pulled, and 16,620 files were pulled.

The *Technical Services Office* expedites the requisitioning, purchasing, storage and maintenance and cataloguing of all field equipment, vehicles, furniture and scientific instruments for the Geological Branch. In addition, it arranges for the storage of thin sections and rocks submitted by staff geologists.

MINES ENGINEERING BRANCH

The function of the Branch is primarily the administration of part IX of The Mining Act and other codes and regulations dealing with the health and safety of workmen. There were 21 engineers on the field staff during the year. Besides the investigation of accidents, fires, unusual occurrences and numerous union complaints, 1,944 routine inspections were carried out.

There were 15 fatal accidents which was the lowest number since 1906.

Compensible accident frequency rose slightly, but the number of accidents actually decreased. The number and severity of shaft hoisting accidents decreased by 22 per cent. Accidents with mobile equipment underground, which had reached serious proportions a few years ago, were almost eliminated.

Research Programs undertaken were as follows:

(1) In partnership with the O.M.A. – to develop a simple inexpensive electronic device to locate broken wires in hoisting ropes;

(2) At the Haileybury School of Mines – to test safety devices on mines shaft conveyences and determine safe rates of deceleration for men;

(3) With the Mining Industry – to assess X-ray equipment as a means of determining the condition of hoisting ropes within steel clamps; and

(4) With the Mining Industry – to test methods of improving brakes on mobile equipment.

New Codes were introduced to:

(1) Control noise in mining operations; and

(2) control the use of diesel equipment underground

The Cable Testing laboratory completed 1,126 tests in 1973, an increase of 10 per cent over the previous year.

MINE RESCUE TRAINING

Seven fully equipped and staffed mine rescue stations, and thirteen substations, complete with oxygen-breathing apparatus and supplies for emergency use, are operated in the Province. Over eleven hundred mine employees and supervisors receive training in the use of five types of breathing apparatus and in the techniques of underground mine fire control for one full day every two months.

A new, up-dated mine rescue handbook was printed. Most Canadian Provinces and Territories now use the Ontario Mine Rescue Handbook for instructions.

Twenty-nine mine rescue teams participated in seven district competitions, and the seven winners then competed in the provincial finals. The winners of the district competitions were Campbell Red Lake Gold Mines, Noranda Mines, Geco Division, Rio Algom Quirke, Inco Frood-Stobie, Falconbridge East Mine, Willroy-Macassa, and Noranda-Langmuir. The Provincial Champion was the team representing Noranda-Geco.

DIVISION OF FISH AND WILDLIFE

WILDLIFE BRANCH

The Branch objective is to manage, enhance and interpret wildlife populations and habitats so as to provide optimum wildlife-based recreation opportunities and a continuous contribution to tourism and its related industries. Much effort is directed to the maintenance and improvement of wildlife habitat as it is habitat which determines the potential in wildlife numbers.

BIG GAME MANAGEMENT

The deer herd was favoured with its second consecutive mild winter over most of the deer range, although a severe winter was experienced in the northwest. The 1973 deer season in a number of areas was considered the best since 1967, with increased hunter success and an increased proportion of fawns indicating high productivity after the mild 1972–3 winter. The unfavourable trend in forest maturation continues, and budget considerations resulted in some curtailment of habitat improvement programs.

It has become apparent that the moose population has been declining in a number of areas of easy accessibility to hunters. Consequently, a new moose policy is being prepared to allow a more equitable distribution of the moose harvest and recovery of reduced populations.

Black bear numbers, though difficult to assess, are believed to be holding constant. Nuisance bear are trapped and released elsewhere whenever possible, or destroyed if necessary. The number of bear hunters is increasing.

Timber wolf numbers have held steady for 15 years, and coyotes have increased in the past 10 years. The wolf bounty was rescinded in 1972. The Wolf Damage to Live Stock Compensation Act, 1972, authorizes the payment of compensation to landowners who lose livestock to wolves or coyotes. During the fiscal year, a total of $51,600 was paid to 313 livestock producers for losses experienced to wolves and coyotes. These losses included 900 sheep, 8 goats, 85 cattle, 5 swine and 8 instances of poultry predation.

UPLAND GAME MANAGEMENT

Of the species which are subject to fluctuations, ruffed grouse are at a low point in their cycle, while European hare, cottontail rabbits, Hungarian partridge and sharp-tailed grouse are recovering from low populations.

Several species are declining because of the loss of habitat resulting from clean farming practices. The ring-necked pheasant is especially affected. Released birds supplement the wild stock, but only in the fall, and only to a limited extent.

Woodcock, a migratory bird, breeds in large numbers in Ontario. Raccoon are plentiful.

WATERFOWL MANAGEMENT

A program to establish a wild-breeding population of the giant Canada goose has been underway since 1968, and wild birds may be seen in many places.

Snow geese in the far north reproduced well in 1973, resulting in large numbers in Ontario. The 1974 nesting season was average.

The fall populations of ducks of various species were similar to those in earlier years.

WILDLIFE EXTENSION AND PROVINCIAL WILDLIFE AREAS

Thirty-four Areas are located throughout southern Ontario to provide wildlife-based recreation. Habitat is managed to produce wildlife for viewing, hunting and maintenance of wildlife populations. Interpretive programs are being developed in wildlife management and general ecology.

FIELD SERVICES

Conservation officers are responsible for the enforcement of laws and regulations under The Game and Fish Act, the Ontario Fishery Regulations, and The Migratory Birds Convention Act. Convictions to date totalled 4,491 about 500 fewer than in the previous year.

Ministry officers supervised 29,400 hunter examinations in 1973, an increase of approximately 4,500 over 1972. Eighty-eight per cent of the candidates were successful.

WILDLIFE SURVEYS AND RECORDS

This office, formerly called the Central Licence Bureau, files hunting and non-resident angling licences. Statistics on participation in hunting including participation rates, hunter success and harvest, and socio-economic characteristics of participants are obtained through mailed questionnaires. The information so collected supplements data obtained in the field and forms the basis for wildlife management and recreation planning.

SPORT FISHERIES BRANCH

The Branch objective is to maintain and improve the fish populations of Ontario as a stable base upon which to provide continuing recreational and economic benefits to the people of Ontario.

During recent decades, some of our waters have lost production potential, and some fish populations have lost stability. Causes of such losses are difficult to diagnose in specific terms but are, in general, brought about by either excessive exploitation, excessive degradation of water quality by nutrients, and/or contaminants; or by the side effects of newly introduced or invading species such as smelt or sea lampreys.

Recovery of the former fish production potential of our waters requires: a continuing international participation in the program of the Great Lakes Fishery Commission, which includes sea lamprey control; an increased fisheries role in water quality management programs co-ordinated by the International Joint Commission; and a more intensive level of general fisheries management effort throughout the province. The planning essential to meeting these requirements was well advanced during the year.

FISH CULTURE

About 241,000 pounds, or 5.1 million fish, were stocked in the public waters of Ontario during the year. The Great Lakes rehabilitation program required forty per cent; the balance were released in numerous inland waters, across the province. Brook trout and lake trout and the selected hybrid, splake, accounted for just over fifty per cent of the total fish stocked.

Planning continued for the proposed Lennox Fish Culture Station in southeastern Ontario, and for the reconstruction of Dorion Fish Culture Station in northwestern Ontario.

Systems providing for analysis of production capacities and for production and operational efficiencies were implemented at all fourteen provincial fish culture stations. The information generated will provide a necessary base for the considerably expanded fish culture program required to meet a growing public demand, and to meet the needs for rehabilitation of depleted stocks of fish in the Great Lakes.

A Ministry agreement with the University of Guelph

permitted the continuation of disease diagnostic services and fish nutrition studies. Improved diet formulations were developed and tested with favourable results.

FISHERIES SERVICES

Total sales of non-resident, non-Canadian angling licences continued to increase in spite of minor decreases in three-day and organized camp licences. A 9.4 per cent rise in seasonal licences more than offset the decreases. In 1973, 464,765 seasonal and 211,600 three-day licences were sold.

Initially established in 1972, the Canadian Resident Angling Licence continued to be popular and sales increased from 14,469 to 19,108 in 1973.

This year saw the completion of major development work on a computer system to analyze creel census data as well as initial design and development of a Lake Inventory Data Base system. Continuing effort on these and other systems are part of a co-ordinated project in the Division to develop an Ontario Fisheries Information System.

POPULATION DYNAMICS

As part of the planning for an intensified level of fisheries management effort, a small group of specialists is being established at Main Office. These specialists will develop techniques and guidelines for use by field staff throughout the province, and will be available for consultation on any water in the province. Their specialization should make possible the accumulation of the right kinds, and the proper amounts, of information from fish harvested by anglers or by commercial fishermen and from the fish not normally harvested, in order that management treatments can be applied at the first sign of stress in the fish community.

In 1973, a specialist in salmonid (lake trout, brook trout, rainbow trout and the species that live with them) community dynamics began work. Emphasis, at first, will be on our lake trout communities.

FISH HABITAT (ENVIRONMENTAL) DYNAMICS

Our waters, fish habitats, here in the north temperate zone, go through seasonal changes which are normal for them and for the fish and other life in them; they are said to be dynamic as opposed to static. Modern man's activities, hydro development, road building, agriculture, pulp manufacturing, mining, cottage development, etc., add other kinds of changes to fish habitats. The changes imposed are seldom obvious to man in the short term, but it has become clear that fish populations must and do respond to these changes even in the short term.

Considerable losses of fish production potential are attributable to changes in water quality imposed by man's developmental activities.

Believing that many similar losses can be avoided or minimized in the future by careful planning and engineering, considerable effort is being given to making available advice and forecasts of potential impacts on fish habitats. To improve our understanding of these impacts, numerous intensive surveys are under way, e.g., with Ministry of Transportation and Communications – a study of the Hanlon Expressway and its impact on a brook trout stream; with Ontario Hydro, Stelco and Ministry of the Environment – a survey of that part of Lake Erie adjacent to the Nanticoke development.

As part of our program of reclaiming lost fish habitat, a fishway was installed on the Ganaraska River at Port Hope. This fishway provides access to some forty miles of good upstream habitat, and over five hundred rainbow trout and some brown trout made the journey this spring.

In our continuing detailed inventory program, some 540 lakes and 50 streams were examined in 1973. Over four hundred "fishing maps" have been prepared for public use.

PLANNING

A publication "Ontario Angling, Facts and Figures" was completed in 1973 and is now in press. The data presented will provide planners with considerable information on Ontario's sport fish 'users.'

The "Trout and Salmon Migratory Routes Map" covering southern Ontario has proven most popular. A companion map for northern Ontario is in preparation.

Work has begun on the calculation of potential fish production targets for Regions and Districts.

COMMERCIAL FISH AND FUR BRANCH

THE FRESHWATER FISH INDUSTRY

The 1973 food-fish harvest increased 17 per cent to 53.1 million pounds ($10.4 million). Although the reported bait-fish harvest declined to 7.6 million pounds, its value increased to $2.1 million. The industry employed 5,500 people. Some of the major developments during the year were as follows.

The establishment of a Freight Equalization Assistance Program to help fishermen in northwestern Ontario meet the high costs of transporting fish from remote areas and to encourage the harvest of under-utilized species.

The continuation of experiments to develop selective harvesting techniques for whitefish in northern Ontario.

The settlement of two claims for redundancy resulting from the operation of the Freshwater Fish Marketing Corporation ($98,604).

The investigation of new gear and holding facilities for bait-fish.

The termination of exploratory fishing operations in Lake Erie for perch and coarse fish when it was found that it was not economically feasible in the area east of the Essex-Kent boundary during the times of year in which testing occurred.

Exploratory gill-netting for chub in eastern Lake Superior indicated that this operation would be economically feasible and would not interfere significantly with lake trout at specific times of the year and in the areas tested.

The extension of the smelt season in Lake Superior by the introduction and demonstration of small-mesh trapnets to harvest smelt as they move back into the deeper waters.

The development of domestic markets for smoked and filleted nullet, as well as maria fillets.

The publication of the booklet "Out of the Water, Ontario's Freshwater Fish Industry" which traces the history of the fishery up to the present.

The continuing availability of reasonable boat insurance through federal-provincial co-operation in the Fishing Vessel Insurance Plan.

THE WILD FUR INDUSTRY

The strong market demand of 1972–3 continued into

1973–4. The average pelt price of beaver, the major species, remained approximately the same over this period. A decline in harvest of beaver of approximately five per cent was balanced by increased harvests of muskrat, raccoon, squirrel and coloured fox.

Computer programs were used to chart the flow of raw fur through Ontario, from which were derived the industry's economic status.

Trapper workshops continued with emphasis on effective harvest and quality fur production. In particular it was determined that most trappers, who took a special, intensive course provided by the Ontario Trappers' Association, increased their incomes significantly.

Trap development was emphasized with many designs being tested. Several modifications indicated advances in humane features and efficiency. Extensive testing in the field of these modifications was planned.

Major management effort continues to be directed toward beaver. Computer programs developed to determine relationships between biological features of beaver and habitat conditions were carried out in addition to aerial census and specimen analysis. From these data it is hoped that habitat may be categorized and harvests manipulated.

A marten and fisher study was carried out in Parry Sound District in co-operation with the University of Guelph.

RESOURCE DEVELOPMENT (Native People)

The following types of projects were carried out during the fiscal year under the Federal-Provincial Resources Development Agreement:

Fur. Trappers and their families from James Bay were assisted in establishing themselves on vacant traplines in central Ontario.

Commercial Fish. Lakes were surveyed to assess their potential. Fishermen were instructed in the netting, cleaning and packing of fish.

Tourism. Indian bands along the coast of Hudson and James Bays were assisted in setting up and operating tourist camps.

Hide Collection. 5,000 moose and deer hides were collected from hunters in the Province and distributed at tanning costs to Indian bands.

Timber. Technical advice was provided on reforestation, logging and lumber production to assist Indians in managing reserve forests.

Planning. Indians attended district meetings and took an active part in the planning of projects.

FISH & WILDLIFE RESEARCH BRANCH

The objective of the Branch is to provide the understanding of basic principles related to fish and wildlife resources for their optimum management by undertaking or arranging investigative research.

Examination of existing programs and emphasis on their completion remained a major Branch preoccupation. In addition, examination of new directions for fisheries and wildlife research relevant to the accepted objectives of the Ministry, Division and Branch, began to crystalize. Two such introspective processes, in a period of change within the Ministry, have simultaneously stimulated the staff within this Branch throughout the province.

Assuring the understanding of the research program by management staff in the main office and the field is a continuing activity, and a search for a viable mechanism for such assurance will continue.

Fisheries research in Ontario has two broad goals towards which individual programs contribute. The first is to improve our understanding of the responses of fish communities to the interacting stresses imposed by man's increasing use of the aquatic environment and of the fish stocks themselves, and hence our ability to predict them. The second is to extend the range of management options available to deal with these stressed communities, and to refine the methods by which their success or failure is evaluated.

The main thrust towards the first goal remains the careful search for cause and effect in fish communities which have undergone degenerative changes in waters where man's activities have caused stresses, obvious or suspected. Our scientists' studies in this direction are increasingly being co-ordinated with those of other agencies, especially those concerned with water quality. As a consequence, increasing concern is being given to fisheries interests in the comprehensive multi-disciplinary, multi-agency studies of Great Lakes water quality directed by the International Joint Commission for Boundary Waters. The emergence of these co-ordinated efforts to provide for healthy fisheries in healthy waters is an important development whose full potential remains to be exploited.

The main thrust toward the second goal is the development through genetic research and selective breeding of fish possessing qualities recommending them for stocking into our natural waters or for outright aquaculture. The former is intended to provide stocks fitted to survival under to-day's conditions, even if deteriorated, while the latter looks ahead to the provision of food for a protein-hungry world by methods analogous to those of agriculture.

Wildlife research in Ontario seeks to fill our knowledge gaps by investigation of behaviour, physiology, reproduction, pathology, population dynamics and interactions between wildlife and habitat of selected species.

A major effort, in co-operation with other agencies, aimed towards immunization of wildlife against rabies, is near maturity. An oral vaccine was developed, and experiments on the delivery system conducted. This program is far in advance of anything comparable, and has elicited world-wide interest.

Research on polar bears in Ontario was expanded. A new study of cavity nesting ducks began, aimed at increasing breeding duck populations in northern Ontario. Field studies of black bears, deer and small carnivores continued. Pathological work involved the analysis of material collected by Dr. Audrey Fyvie before her death, while laying groundwork for experimental studies of the influence of diseases on population dynamics.

Continued development of a radio-tracking system bore valuable fruit, but full utilization of this tool is hampered by lack of the automated receiving equipment available through modern technology.

DIVISION OF PARKS

PARK MANAGEMENT BRANCH

The nmber of campers using Ontario Provincial Parks increased 6.6 per cent in 1973 to 1,600,817, while total visitation declined marginally to 12,136,909, a 1 per cent reduction from 1972.

In southern Ontario, many families had to be turned away on busy weekends despite the addition of new campsites to the system. Of 20,209 campsites available in 1973, 75 per cent were located in southern Ontario.

No new parks became operational in 1973, and thus the total number remained at 115. However, improvements were completed at many existing parks.

INTERPRETATION SERVICES

During the year, 894,314 park visitors attended exhibits, conducted trips, self guiding trails, lectures, and organized group recreation activities to learn more about Ontario and its parks, environment, resource management and history.

A Waterfowl Viewing weekend was held at Long Point Provincial Park in co-operation with naturalist organizations, and over 10,000 visitors attended.

The number of parks offering interpretation programs continued to expand, and several new audio-visual programs were produced.

WINTER PARKS

During the winter of 1973–4, four parks were operated on a winter basis: Arrowhead, near Huntsville; Sibbald Point, on Lake Simcoe; Pinery, on Lake Huron; and Rondeau, on Lake Erie. Winter facilities included snowplowed roads and campsites, heated washrooms with hot water, central drinking water, fuelwood supply, garbage disposal, and electrical outlets.

Ski-tows were operated at Pinery and Remi Lake Provincial Parks. Many other parks were used informally for activities such as snowshoeing, cross-country skiing and tobogganing.

SNOWMOBILE TRAILS

Snowmobiling was permitted in Provincial Parks on approximately 200 miles of marked trails and 700 miles of park roads during the winter of 1973–4. In addition, over 600 miles of cross-country snowmobile trails were operated on public lands in Parry Sound, Lindsay and Tweed Districts.

ACCESS POINTS

During the year, close to 1,000 access points with parking areas and boat launch ramps were maintained to provide boaters with access to lakes and rivers.

CANOE ROUTES

In 1973, nearly 90,000 persons entered Algonquin and Quetico Provincial Parks for interior canoe camping.

A booklet, Northern Ontario Canoe Routes, summarizes 125 routes representing 11,000 miles of canoeing waterways.

A program to document canoe waterways in southern Ontario was continued in 1973.

PARK PLANNING BRANCH

RECREATIONAL LAND ACQUISITIONS

Work continued on the evaluation of future parkland with emphasis on increased recreational facilities for southern Otnario residents.

During the year, 16,661 acres were acquired for recreational purposes. Of the total, 5,589 acres were additions to existing parks, while 11,072 acres represented 24 new site acquisitions.

In the implementation of the Niagara Escarpment Report, 4,416 acres were purchased, making a total of 32,008 acres acquired to date.

An additional 3,872 acres of shoreline properties on the Great Lakes were purchased this year.

Under programs recommended by the Canada-Ontario Rideau-Trent-Severn Study (C.O.R.T.S.), 1,793 acres were acquired including an additional 418 acres at Indian Point (Balsam Lake), making a total of 2,118 acres. Expansion of Lake on the Mountain Provincial Park was initiated. New acquisitions of 186 acres at Harris Island, 89 acres at Gloucester Pool, and 1,100 acres at Murphy's Point were also made in implementation of C.O.R.T.S. recommendations.

MASTER PLANNING

The Master Planning program continued to expand this year with completion of Master Plans for Mono Cliffs, Frontenac, Peterborough Petroglyphs, MacGregor Point, and Ouimet Canyon. Master Plans for Algonquin, Quetico, Sibley, Wasaga Beach, Boyne Valley, Short Hills, Methodist Point, Bon Echo, and Carillon are now in the final stages of completion.

Public discussions were held on these plans to permit active public participation in planning for development and management.

NEW PROJECTS

North Shore Lake Superior Study. A study was initiated this year to assess the potential of the north shore of Lake Superior for water oriented recreation. The study will be completed by the summer of 1974 and will present, for public discussion, alternative strategies for recreational development of the shoreline.

Komoka. Land acquisition was initiated for a new, near-urban provincial park on the Thames River four miles west of London. The 1,300-acre park site will be planned and developed in the future to facilitate the growing outdoor recreation demand of the London area.

Blackstone Harbour. A 25,000-acre provincial park is being planned on the Georgian Bay shoreline at Blackstone Harbour in Parry Sound District. The sparkling blue waters of Georgian Bay, rocky islands, and scenic shoreline provide an ideal setting for this new park which will provide additional opportunities for recreation in this already popular area.

Bronte Creek Provincial Park. Ontario's first urban-oriented provincial park entered its initial stage of development, with work being concentrated on park roads, nature trails, picnic shelters, and a demonstration farm.

Algonquin Park. In July, a comprehensive over-all policy statement for Algonquin Park was announced. The policy, utilizing recommendations of the Algonquin

Provincial Park Advisory Committee, outlined a restructuring of the recreational and resource management programs. The policy statement, in conjunction with the committee's recommendations, provide a well structured framework upon which a detailed Master Plan can be completed in the upcoming year.

NATURE RESERVES

Acquisition of 174 acres, of a 300-acre requirement, for a new Nature Reserve at Windsor Prairie, as well as a 34-acre addition to the existing Nature Reserve at Pelee Island, were made during the year. In addition, many areas have been set aside in existing parks as Natural Zones. Inventory reports were compiled for the majority of park areas, assessing their value and fragility in terms of geology and plant life.

HISTORICAL SITES BRANCH

SYSTEMS PLANNING

A historical systems planning group, comprised this year of two historians, an archaeologist, and a geographer, completed the two-year program of developing a methodological basis for the long-range planning of historical resources as part of the provincial parks system.

INVENTORY

The Branch's historical resources inventory underwent rapid development and is proving to be of considerable value in pin-pointing sensitive areas in the assessment of development plans of other agencies.

FIELD RESEARCH

The program of research as a basis for planning and management continued in parks, park reserves, public lands areas, and areas critical to recreation planning. During the year, surveys, inventories, and studies were carried out in 54 areas, including 28 archaeology, 17 history, and nine architectural history studies.

RESEARCH PUBLICATIONS

A Research Report series, publishing outstanding field research, was instituted with three volumes produced during the year.

HISTORICAL PARKS

Fort William Historical Park, Thunder Bay, opened the first four of the 48 projected structures and a temporary visitor information centre. The park was officially opened by Her Majesty the Queen on July 3, 1973. It had 43,360 visitors during the year.

Historic Naval and Military Establishments, Pentanguishene, are being improved and further developed on the basis of new research and analysis. The 1973 season saw 9,468 visitors.

Sainte-Marie Among the Hurons, Midland, had 139,500 visitors during the year, and *Museum of the Upper Lakes*, Wasaga Beach, had 12,593 visitors.

FINANCE AND ADMINISTRATION DIVISION

ADMINISTRATIVE SERVICES BRANCH

The Branch is a support group offering the administrative services that lie outside the personnel and financial fields.

Operations Section

OFFICE MANAGEMENT

This unit is responsible for the design, standardization, issuance and replacement of any of the twenty-three different uniform items issued to 1,100 regular staff and 900 summer casual staff (mainly in parks).

The unit is also responsible for the continual updating of the Ministry's listing in telephone directories across the Province, as well as preparing input information for the Government Telephone Directory. A total of 1,500 telephone credit cards and over 1,600 identification cards are issued to the Ministry staff. Other responsibilities include the following.

1. All Branch personnel and accounting functions.
2. The distribution of all Government manuals and their revisions, as well as all the Ministry's policy and procedure directives and key personnel directory.
3. The Ministry equipment inventory control.
4. Reproduction facilities: approximately 101,000 photo copies and 43,000 mimeograph copies per month.
5. The management of over 200,000 active Crown land files and the several incoming documents that necessitate the recording of over 140 entries on the cross-reference index system and the retrieval of over 255 files daily.

PURCHASING

The continued expansion and demand for supplies and services throughout the Ministry created active and widespread procurement and purchasing. There was a constant search for sources of particular equipment, daily contact with suppliers, interviews with manufacturers' representatives and supply houses, etc., and liaison with the Ministry of Government Services.

The economic crisis in the mid-fiscal year brought about a series of shortages of various commodities that had to be either substituted or postponed. The supplies and services that make the Ministry operative include antifreeze, hydraulic cranes, safety hard hats, fork lift trucks, camping equipment, special fish food, tree nursery equipment, steel sheet piling, uniform cloth items, and fire hoses.

Over 25,000 requisitions were received, from which were initiated 11,400 purchase orders, 10,000 Central Stationery requests, 1,200 Central Duplicating requests, 600 requests for telephone installations, transfers, etc., and 2,000 printing requests.

CENTRAL SUPPLY WAREHOUSE

The unit received a total of 450 tons of supplies and

equipment at the King Street warehouse. Shipments, totalling over 360 tons, were made by express, freight, transport and by internal supply to Ministry offices. The Whitney Block stockroom distributed supplies for the Whitney Block from the main warehouse on King Street.

Approximately 50 types of licences and permits were distributed to field offices and 4,000 private agents who sell licences to the public. The licences and permits total over 3½ million, and include hunting, angling, bait-fish, roll-net, frog, trapping, guide, duck, provincial park permit, etc.

Ministry uniforms were shipped from stock, to personnel, upon receipt of a requisition. The whiteprint copy centre prints maps for the Division of Mines publications office for distribution to the public. These copies total over 41,000.

There was liaison with the Ministry of Government Services on Ministry activities pertaining to the Government Visual Identity Program, mail services, and co-ordinating interoffice communications within the Ministry.

Records/Forms Management Section

The Section is the operating arm of the Ministry Records Management Committee. The Committee ensures that the Ministry complies with The Management Board of Cabinet Act 275/73 and that the goals and objectives of the Ministry agree with those of the government as a whole. The Section is formally divided into two distinct units: Records Management and Forms Management.

The Records Management Unit is responsible for maintaining an accurate inventory of all records, records equipment and microrecording equipment; control over the initiation, maintenance, protection, retention and disposition of all Ministry records; conducting feasibility studies regarding all microrecord systems and submitting all proposals to the Records Management Committee of Management Board of Cabinet; conducting training seminars for the Ministry in all aspects of records management; developing Ministry file classification plans; and editing Ministry directives and manuals.

The Forms Management Unit is responsible for establishing, maintaining and reviewing an inventory of Ministry forms; reviewing and approving all requests for forms printing; improvement in design of necessary forms by adherence to Ministry and Government-wide design standards; providing forms analysis and design service to users to ensure that Ministry forms will accomplish necessary operations in the most efficient and economical manner to achieve the desired results: conducting in-depth analysis of all Ministry forms to simplify the flow of each form in use in a system, and to simplify the preparation and handling of the form by removing all superfluous and redundant data with emphasis on consolidation, standardization and elimination; providing technical guidance to form originators; and conducting training seminars in forms management and design for Ministry personnel.

Services Section

ACCOMMODATION OFFICE

The accommodation office is responsible for the directing and co-ordinating of the approval of all leasing transactions and land purchases for the erection of buildings as well as their construction and maintenance; the preparation of the Ministry master accommodation plan and the establishment of immediate medium and long range accommodation objectives; the co-ordination of the funding requirements for all general and special-purpose facilities involving major and minor capital improvements; the planned program for the inspection of Ministry facilities in order to promote and improve communication between field and main office; and the maintenance of official liaison with the Ministry of Government Services in all matters pertaining to accommodation, including provision of funds.

MINES PUBLICATION OFFICE

This office is responsible for the sale and distribution of geological maps and reports, circulars, industrial mineral reports, bulletins and other technical publications prepared in the Ministry.

MAP OFFICE

This office serves the public through the sale of printed maps produced by the Ministry of Transportation and Communications, lake contour map series produced by Sport Fisheries Branch, the National Topographic Series, and the Provincial Topographic Series.

AERIAL PHOTO LIBRARY

This library has samples of all air photographs available for the Province of Ontario. Orders may be placed at the Library for contact prints (10″ by 10″), enlargements made from the negatives of contact prints, and mosaics which may also be enlarged. The library also sells Forest Resources Inventory Maps.

A.D.P. KEY PUNCH UNIT

This Unit accepts for keying the source documents for the Ministry's production data processing systems; schedules computer runs and sees that the desired reports are distributed to user-branches; maintains Ministry magnetic tape library; administers the Ministry's magnetic tapes retained in the library of the Central Computing Branch; and keys the data from source documents on to magnetic tape or punched cards in a predetermined format. The cards or tape produced by this Unit are interpreted by the Ministry's computer programs to produce the desired reports. Approximately two million records are keyed annually.

FINANCIAL MANAGEMENT BRANCH

This Branch provides accounting and financial administrative support services for the Ministry. It maintains main office records of revenue and expenditure, prepares financial statements, and supervises and co-ordinates the accounting functions of the divisional and field offices. Its responsibilities include budget preparation and control, development of accounting and costing systems, financial and cost analyses, pre-audit controls and procedures, and financial liaison with Management Board, The Provincial Auditor, other ministries and agencies. The internal audit section provides a continuing review and assessment of accounting, financial and operational controls.

Financial Report for Year Ended March 31, 1974

Statement of Revenue

For Year Ended March 31, 1974 — *Statement No. 1*

MINISTRY ADMINISTRATION			
Sale of Maps, Publications, etc.		$ 357,812	
Rentals – Ministry Houses		271,103	$ 628,915
LAND MANAGEMENT			
Recovery of Prior Year's Expenditures			
Land Acquisition	$ 14,415		
Air Service	15,073		
Conservation Authorities	368,334		
Fire Suppression	18,474		
Miscellaneous	6,879	$ 423,175	
Taxation – Mines Acreage Tax		653,238	
Royalties – Forest Protection Charges		1,872,543	
Fees & Licences – Mines		477,616	
Public Domain			
Leasing & Licensing of Lands			
Leasing & Licensing of Lands	$ 676,384		
Gas and Mining Leases	858,567	1,534,951	
Sales			
Land and Buildings	$ 1,364,920		
Air Service – Flying Fees	16,310		
Recovery Fire Fighting Costs	106,803		
Equipment	365,966		
Sundry Sales	22,957	1,876,956	
Reimbursement of Expenditures – Government of Canada			
Flood Control Conservation Projects	$ 472,022		
ARDA – Conservation Authorities	330,540		
Dams, Reservoirs, & Channel Improvements	421,777	1,224,339	8,062,818
OUTDOOR RECREATION			
Recovery of Prior Year's Expenditures			
Nanticoke Agreement	$ 13,341		
Miscellaneous	8,544	$ 21,885	
Recreation Areas			
Park Entrance & Camping Fees	$ 4,385,064		
Park Concessions	162,596		
Park Miscellaneous	28,918	4,576,578	
Historical Sites			
Fees	$ 123,498		
Sales	19,159	142,657	
Fish & Wildlife			
Hunting & Fishing Licences	$10,520,734		
Hunter Safety Program	95,991		
Royalties	247,682		
Confiscated Articles	25,699		
Miscellaneous – Fish & Wildlife	91,976	10,982,082	
St. Lawrence Parks			
Fees	$ 1,445,316		
Sales	868,811		
Facilities	65,231		
Miscellaneous	9,086	2,388,444	18,111,646
Carried Forward			$26,803,379

Statement of Revenue (continued)

For Year Ended March 31, 1974

Statement No. 1

Brought Forward			$26,803,379
RESOURCE DEVELOPMENT			
Renewable Resource Development			
Recovery of Prior Year's Expenditures			
Industrial Development Agreement	$ 16,687		
ARDA – Grants to Municipalities & Conservation Authorities	50,667		
Logging Roads – Construction Costs	216,587		
Miscellaneous	3,150	$ 287,091	
Forest Management			
Stumpage	$14,579,235		
Forest Management	143,352		
Forest Products	196,070		
Stock Production	243,857		
Miscellelaneous Timber	19,745	15,182,259	
REIMBURSEMENT OF EXPENDITURE – GOV'T OF CANADA			
Forest Management			
ARDA – Forest Stand Improvement		97,940	15,567,290
NON-RENEWABLE RESOUCE DEVELOPMENT			
Mineral Management			
Recovery of Prior Year's Expenditures			
Onakawana Agreement	$ 10,774		
Mine Rescue Stations – Recovery of Operational Cost	81,884		
Mineral Exploration Assistance Program	24,495	$ 117,153	
Mining Tax		46,309,367	
Royalties		744,462	
Fees, Licences		107,716	
Miscellaneous		500	47,279,198
MISCELLANEOUS			
Recovery of Prior Year's Expenditures			11,027
TOTAL REVENUE			$89,660,894

Total Expenditures Allocated to Main Services

For Year Ended March 31, 1974

Programs	Vote Total	Activity Total	Sub-Activity Total
	$	$	$
Ministry Administration	20,284,222		
(Pro-rated by operating Activities)			
Main Office		2,625,950	2,625,950
Field Offices		5,929,492	5,929,492
Financial Management		1,587,013	1,587,013
Administrative Services		1,817,038	1,817,038
Information Services		908,332	908,332
Legal Services		348,738	348,738
Personnel		732,028	732,028
Junior Rangers		1,709,777	1,709,777
Youth Corps (S.W.O.R.D.)		3,789,363	3,789,363
Northern Affairs		836,491	836,491
	20,284,222	20,284,222	20,284,222
Land Management	67,202,827		
Program Administration (Pro-rated by Activities)		838,858	838,858
Lands and Waters Protection		20,813,486	
Protection Services			2,981,306
Fire Control, Services and Detection			5,345,102
Air Services – Operating and Repair			2,449,142
Communications – Operating and Repair			804,898
Plant – Operating and Repair			1,410,995
Stock Control and Repair			1,049,926
Engineering Service			3,621,594
Construction of Dams, Docks and Dredging			1,044,565
Maintenance of Dams, Docks and Locks			491,529
Maintenance of Access Roads			1,614,429
Extra Fire Fighting		1,148,684	1,148,684
Lands and Waters Classification		4,524,439	
Lands Service			608,104
Land Use Co-ordination			560,108
Surveys and Mapping			2,587,954
Inventory			768,273
Lands and Waters Mineral Title			
Classification		10,270,904	
Mines Service			3,728,345
Land Acquisition			6,542,559
Conservation Authorities		29,606,456	
Conservation Service			1,365,263
Grants			28,241,193
	67,202,827	67,202,827	67,202,827
Outdoor Recreation	37,335,044		
Program Administration (Pro-rated by Activities)		1,289,820	1,289,820

Land Management	Environmental Protection	Parks & Historical Sites	Fish & Wildlife	Forest Management	Mineral Management	Conservation Authorities	Others
$	$	$	$	$	$	$	$
228,458	309,599	719,773	379,975	691,150	259,969	37,026	
515,866	699,087	1,625,274	857,997	1,560,642	587,020	83,606	
138,070	187,109	435,000	229,641	417,702	157,114	22,377	
158,082	214,229	498,050	262,925	478,245	179,887	25,620	
79,025	107,092	248,974	131,436	239,073	89,925	12,807	
30,340	41,116	95,589	50,463	91,788	34,525	4,917	
63,686	86,306	200,649	105,924	192,670	72,471	10,322	
112,845	143,621	875,406	121,394	456,511			
214,408	237,254	425,300	479,781	398,939	1,757	2,031,924	
							836,491
1,540,780	2,025,413	5,124,015	2,619,536	4,526,720	1,382,668	2,228,599	836,491
197,803	311,804	48,066	77,343	59,056	106,954	37,832	
	2,981,306						
	5,345,102						
168,746	1,271,105	159,929	624,776	208,912	4,163	11,511	
33,081	121,620	226,176	114,618	216,679	81,375	11,349	
57,992	213,201	396,489	200,926	379,840	142,652	19,895	
43,152	158,644	295,029	149,509	282,640	106,148	14,804	
1,738,365	253,512	362,159	1,158,910	108,648			
501,391	73,120	104,456	334,261	31,337			
235,934	34,407	49,153	157,289	14,746			
100,095	138,841	214,719	172,744	979,958	8,072		
	1,148,684						
608,104							
560,108							
2,587,954							
768,273							
44,336					3,684,009		
45,807		5,703,506	542,376	250,870			
						1,365,263	
						28,241,193	
7,691,141	12,051,346	7,559,682	3,532,752	2,532,686	4,133,373	29,701,847	
		907,975	381,845				

Total Expenditures Allocated to Main Services (continued)

For Year Ended March 31, 1974

Programs	Vote Total	Activity Total	Sub-Activity Total
	$	$	$
Recreation Areas		21,322,592	
Parks and Historical Sites Service			2,543,317
Operating			8,631,757
Development			10,147,518
Fish and Wildlife		10,671,009	
Fish and Wildlife Service			2,964,924
Sport Fish Maanagement			2,447,071
Hatcheries Operation			1,143,374
Wildlife Management			1,418,704
Games & Fish Enforcement			2,696,936
St. Lawrence Parks Commission		4,051,623	
Parks Service			1,250,673
Operating			2,800,950
	37,335,044	37,335,044	37,335,044
Resource Products	33,805,505		
Program Administration (Pro-rated Activities)		921,517	921,517
Mineral Management		5,347,805	
Mines Service			4,284,145
Mine Rescue Training			94,849
Laboratory and Research			239,471
Temiskaming Testing Lab			137,487
Shared Onakawana Project			96,402
Shared Exploration Costs			495,451
Forest Management		21,005,902	
Forest Service			9,616,918
Stock Production			3,095,706
Crown Regeneration and Site Preparation			4,527,830
Crown Data Collection and Wood Measurement			2,222,882
Crown Management			1,329,952
Grants to Municipalities and Conservation Authorities			212,614
Commercial Fish and Fur		772,422	772,422
Resource Access		5,757,859	
Access to Resources			3,971,947
Construction of Logging Roads			322,829
Construction of Forest Access Roads			1,463,083
	33,805,505	33,805,505	33,805,505
Total Net Expenditure	158,627,598	158,627,598	158,627,598
Percentage of Total			

Land Management	Environmental Protection	Parks & Historical Sites	FISH & Wildlife	Forest Management	Mineral Management	Conservation Authorities	Others
$	$	$	$	$	$	$	$
		2,543,317					
		8,631,757					
		10,147,518					
			2,964,924				
			2,447,071				
			1,143,374				
			1,418,704				
			2,696,936				
		1,250,673					
		2,800,950					
		26,282,190	11,052,854				
37,229	4,239	6,727	25,526	680,909	166,887		
					4,284,145		
					94,849		
					239,471		
					137,487		
					96,402		
					495,451		
				9,616,918			
				3,095,706			
				4,527,830			
				2,222,882			
				1,329,952			
				212,614			
			772,422				
1,299,621	106,448	162,850	19,860	1,779,631	603,537		
				322,829			
29,262	45,356	76,080	118,510	1,190,949	2,926		
1,366,112	156,043	245,657	936,318	24,980,220	6,121,155		
0,598,033	14,232,802	39,211,544	18,141,460	32,039,626	11,637,196	31,930,446	836,491
6.68%	8.97%	24.72%	11.44%	20.20%	7.33%	20.13%	.53%

PERSONNEL BRANCH

SENIOR ADMINISTRATION STAFF, MARCH 31, 1974

DEPUTY MINISTER

W. Q. Macnee

ASSISTANT DEPUTY MINISTERS

L. Ringham, *Northern Ontario*
W. T. Foster, *Southern Ontario*
A. J. Herridge, *Resources and Recreation*
J. W. Giles, *Lands and Waters*

ONTARIO COMMITTEE, MAN AND RESOURCES

R. Hummel, *Chairman*

REGIONAL DIRECTORS

J. R. Oatway, *Northwestern (Kenora)*
R. A. Baxter, *North Central (Thunder Bay)*
G. A. McCormack, *Northern (Cochrane)*
J. N. Hughes, *Northeastern (S. S. Marie)*
J. S. Ball, *Algonquin (Huntsville)*
T. W. Hueston, *Eastern (Kemptville)*
A. H. Peacock, *Central (Richmond Hill)*
W. H. Charlton, *Southwestern (London)*

EXECUTIVE DIRECTORS

J. W. Lockwood, *Division of Forests*
G. A. Jewett, *Division of Mines*
K. K. Irizawa, *Division of Fish & Wildlife*
J. W. Keenan, *Division of Parks*
L. H. Eckel, *Division of Lands*
W. G. Cleaveley, *Field Services Division*
R. R. MacBean, *Finance & Administration Division*

DIRECTORS

R. M. Dixon, *Forest Management Branch*
J. M. Barron, *Timber Sales Branch*
D. H. Burton, *Forest Research Branch*
Dr. E. G. Pye, *Geological Branch*
Dr. T. P. Mohide, *Mineral Resources Branch*
D. A. Moddle, *Mineral Research Branch*
H. F. R. Davis, *Mines Engineering Branch*
D. R. Johnston, *Wildlife Branch*
K. H. Loftus, *Sport Fisheries Branch*
M. J. Brubacher, *Commercial Fish & Fur Branch*
J. D. Roseborough, *Fish & Wildlife Research Branch*
R. H. Hambly, *Park Management Branch*
T. E. Lee, *Park Planning Branch*
R. G. Bowes, *Historical Sites Branch (Midland)*
J. McGinn, *Lands Administration Branch*
R. J. Burgar, *Land Use Co-ordination Branch*
R. G. Code, *Surveys & Mapping Branch*
W. L. Sleeman, *Forest Fire Control Branch*
T. C. Cooke, *Air Services Branch*
S. B. Panting, *Engineering Services Branch*
R. V. Scott, *Northern Affairs Branch*
A. C. Goddard, *Financial Management Branch*
H. B. Farrant, *Personnel Branch*
J. A. Queen, *Administrative Services Branch*
G. A. Hamilton, *Information Branch*
Dr. W. R. Henson, *Policy Research Branch*
A. D. Latornell, *Conservation Authorities Branch*

DISTRICT MANAGERS

W. D. Adlam, *Ottawa District*
R. P. Alton, *Wawa District*
E. N. Arbuckle, *Espanola District*
J. R. Bailey, *Moosonee District*
R. G. Bailey, *Napanee District*
M. P. Barker, *Atikokan District*
L. L. Bronson, *Pembroke District*
W. H. Cantelon, *Tweed District*
W. R. Catton, *Cambridge District*
W. B. M. Clarke, *Aylmer District*
J. K. Cleaveley, *Geraldton District*
D. J. D'Agostini, *Fort Frances District*
J. E. Dickenson, *Niagara District*
C. Dionne, *Gogama District*
T. E. Dodds, *Ignace District*
C. E. Emblin, *Hearst District*
H. P. Endress, *Dryden District*
E. W. Everley, *Red Lake District*
D. R. Fortner, *Chatham District*
E. G. Gillespie, *Kenora District*
O. Goodman, *Bancroft District*
C. G. Gray, *Lindsay District*
L. J. Haas, *Terrace Bay District*
D. L. Hagar, *Blind River District*
J. E. Hamilton, *Thunder Bay District*
G. O. Koistinen, *Nipigon District*
J. H. Lever, *Algonquin Park District*
R. G. Lighheart, *Kapuskasing District*
W. J. Lovering, *Owen Sound District*
W. D. Mansell, *Wingham District*
R. B. McGee, *Simcoe District*
D. E. McHale, *Sudbury District*
J. G. Minor, *Kirkland Lake District*
J. R. Morin, *Cornwall District*
O. J. O'Grady, *White River District*
A. F. Papineau, *Timmins District*
W. R. Peck, *Parry Sound District*
C. E. Perrie, *Sioux Lookout District*
E. Rogers, *North Bay District*
J. E. Rumney, *Temagami District*
W. D. Schafer, *Huronia District*
J. H. Sellers, *S. S. Marie District*
F. E. Sider, *Maple District*
J. M. Small, *Chapleau District*
R. W. Tippett, *Bracebridge District*
R. H. Trotter, *Brockville District*
W. Vonk, *Lanark District*
D. D. White, *Minden District*
G. A. Wright, *Cochrane District*

TOTAL STAFF

March 31, 1974

	Regular	Probationary	Unclassified	Total
Main Office	1,060	272	219	1,551
Field Offices	2,393	250	973	3,616
Total	3,453	522	1,192	5,167

Total Complement of Positions	4,205
Vacancies in Complement	258
Regular and Probationary Staff	3,947
New Employees Hired, 1973 4	402

PROFESSIONAL STAFF

March 31, 1974

Biologists	98
Economists	8
Engineers	22
Foresters	242
Geologists	53
Minign Engineers	30
Park Planners	16
Scientists	48
Miscellaneous	44
TOTAL	561
Resource Technicians with Diplomas	1,445
Licensed Scalers	857

STAFF TURNOVER*

March 31, 1974

Deceased	9
Transferred	30
Resigned	197
Dismissed	3
Superannuated	71
Miscellaneous	12
TOTAL	322

**The ratio of separations to the total of regular and probationary staff at March 31, 1974, was 8.10 per cent.*

INFORMATION BRANCH

The Branch prepared and managed Ministry exhibits at seven major shows and exhibitions during the year. Exhibit material was supplied to Districts for approximately 70 fairs and shows where the Ministry exhibit was manned by field staff. Schools, public libraries and shopping plazas were serviced to a greater extent as the requests for displays became more numerous.

The Ministry's newsletter was mailed weekly to 4,050 news outlets and special interest groups, and the French translation went to 180 outlets. Urgent news was supplied directly to important news outlets.

A set of ten television shorts on fire prevention was produced and distributed to Ontario stations, and additional program material was supplied from time to time. Both main and field offices met frequent requests for professional staff to appear on talk shows.

The Ministry's radio series was continued with 47 Provincial stations, and special material was provided on request.

During the year, information was mailed to 41,800 persons who requested assistance.

The Photograph Library supplied material from a stock of 41,400 negatives and 12,500 colour transparencies.

Illustrated lectures were given on many aspects of the Ministry's service to schools, youth clubs, church and service groups, and conservation associations.

The Film Library loaned approximately 1,700 films to field offices during the year. Projection equipment and additional films were supplied to Provincial Parks during the summer months. The Library now has 330 titles with two or more prints of many of the titles. The following films were added to main office and field office film libraries:

The Gold Seekers
Seven Deadly Sins
The Aquatic Ecologist
Mine Makers
Introduction to Snowmobiling
The Carol Project
Pipelining in a Canadian Winter
Forest: Trees and Logs
The Friendly Flame
The Magnificent Gift
Forests Forever
Landscape
Rainbow's End
Go North
Spirit of Stone
Beaverman
Snow Revolution.

Editorial services included the supply of information and statements to outside agencies, and contributions to Ministry publications. During the year, new Ministry releases included the following:

Trout and Salmon Migratory Routes (map, $1.00)
Algonquin Provincial Park Canoe Routes (map, $1.00)
Algonquin Provincial Park (folder)
Fort William Historical Park (folder)
The Planting of Hardwood Trees and Shrubs
The Forest Tree Grower's Calendar
Out of the Water
Trapping Guide
Ontario Mineral Review
Michipicoten, Hudson's Bay Company Post
Ontario Land Inventory (Methodology Series: Wildlife)
Lake Temagami Plan for Land Use and Recreation Development
Statistics (1973 Revised).

SAFETY PROGRAMME DEVELOPMENT SECTION

During the year, courses on safety instruction were given to supervisors. First-aid training was given on a regular basis to staff, and many were trained in the use of the resuscitator. General training included instruction in the Lateiner Method of Accident Control and in the maintenance of fire extinguishers.

When fire crews are being trained, they are given a one-day course in safe working practices. Employees who use boats in their work are given courses on boating safety. Conservation Officers are instructed on the safe handling of side arms. Vehicle drivers are tested and trained throughout the Province.

Parks and work camps are inspected for safety and sanitation. Beach patrols are given a rigorous test in life-saving practices and the use of resuscitators.

During the year, a total of 23,522 first-time hunters were trained in safe gun handling and safe hunting practices by 1,350 certified Hunter Safety Training instructors.

At the request of the Ministry, the Ontario Safety League gave a series of courses in Provincial Parks on safe practices in canoeing, camping and outdoor living.

The Ministry's costs for Workmen's Compensation during the year amounted to $362,475.12, including pensions and administrative charges. Compensable claims totaled 834.

The lowest injury frequency was 16.3, attained by Southwestern Region.

LEGAL SERVICES BRANCH*

During the fiscal year commencing with April 1st, 1973, and ending with March 31st, 1974, Legal Services Branch prepared and processed amendments to The Forest Fires Prevention Act (by Statutes of Ontario 1973, Chapter 14); to The Conservation Authorities Act (by Statutes of Ontario 1973, Chapter 98); to The

**Legal Services Branch was transferred to the Ministry of the Attorney General on April 1, 1973, and seconded to the Ministry of Natural Resources on the same date.*

Ministry of Natural Resources Act, 1972 (by Statutes of Ontario 1973, Chapter 105); to The Mining Act (by Statutes of Ontario 1973, Chapter 106); and to The Game and Fish Act (by Statutes of Ontario 1973, Chapter 108).

Fifty-nine regulations made under the authority of Acts administered by the Ministry and three hundred and ninety-eight orders in council were prepared and processed through the Branch during the fiscal year.

Two Federal-Provincial co-operative agreements – one relating to a study of the impact of dredged spoils disposal on aquatic resources, and the other to a joint survey of parts of the Ontario shoreline of the Great Lakes to study high-water and storm damage to the shoreline – were entered into by the Ministry during the fiscal year.

NORTHERN AFFAIRS BRANCH

The Branch is a supporting service for all government agencies doing business in northern Ontario. There is a small co-ordinating office in Toronto and three regional and 23 "storefront" offices in the North. Small communities are served by 50 satellite offices manned on a volunteer basis by employees of other government agencies.

Northern Affairs offices provide information and aid citizens with problems related to all levels of government. They also have a "government bookstore" activity, distributing approximately 10,000 publications per month and carrying pamphlets and forms covering many programs.

The officers provide services and facilities and perform specific functions for other agencies. In many instances they are able to operate across ministerial lines, and they hold letters of authority under several Acts administered by other Ministries.

A total of 132,975 transactions were handled in 1973, compared with 80,958 in 1972 and 58,492 in 1971.

POLICY RESEARCH BRANCH

The Branch functions as a part of the Deputy Minister's office. It is organized to provide research supporting policy development in fields such as environmental quality, Ministry research and development, proposed water diversions, industrial development, unorganized areas of the north, resource prices, resource transportation, resource allocation, recreation demand and supply, and long-range planning.

The Policy Research Branch also provides:

1. Ministry liaison with other Ministries and central agencies of Government.
2. Development of Management Information System and the operation of Ministry libraries.
3. Technical services in areas such as biometrics, economics, and various areas of biology.
4. Technical studies of natural resource management in other areas, notably in the U.S.S.R.

THE MINING AND LANDS COMMSSIONER

Effective November 1, 1973, the position of Mining and Lands Commissioner was created by amendments to The Ministry of Natural Resources Act, 1972. In addition to duties and powers to be assigned by regulation, the Commissioner has the jurisdiction formerly exercised by the Mining Commissioner under The Beach Protection Act, The Mining Act, and The Mining Tax Act, 1972.

Orders, etc., issued out of the tribunal during the past fiscal year, were as follows:

Orders extending time for performing work or applying and paying for lease	921
Orders extending time for tagging	1
Orders authorizing special renewal of licences	28
Miscellaneous orders and judgments	41
TOTAL NUMBER OF ORDERS	991

Revenue Derived from Filing Extension Orders	No. of Claims	Revenue
Prior to Default	8,974	$44,870.00
Relief from Forfeiture	671	6,710.00
Tagging	6	30.00
TOTAL	9,651	$51,610.00

During the year, sittings were held at Kenora, Kirkland Lake, Sault Ste. Marie, Sudbury, Thunder Bay, and Toronto.

DIVISION OF LANDS

LANDS ADMINISTRATION BRANCH

The Branch is responsible for policy and objectives in the administration of Crown lands (public and mining) in Ontario, and for acquiring private lands for Ministry purposes.

LAND ACQUISITION SECTION

The Section ensures the orderly purchase of all private properties required for the programs of the Ministry. This entails setting acquisition pirorities, maintaining a computerized statistical control, and overseeing and approving each actual purchase. It is responsible for managing the acquired properties on an interim basis to provide optimum benefits until they are incorporated into a Ministry program. Since the inception of the program in 1962, nearly 600,000 acres of land have been acquired.

TITLES SECTION

The Section prepares and engrosses the title documents required to dispose of Crown lands under The Public Lands Act and The Mining Act. In addition, the Section levies mining acreage tax and carries out the procedures required to effect forfeiture to the Crown of alienated mining lands when the owners of such lands default.

MINING LANDS SECTION

Under The Mining Act, the Section prepares rulings for leases and Exploratory Licences of Occupation; disposes of land for sand and gravel purposes, and collects royalties for salt and sand and gravel removals; withdraws lands from disposition; and collects and assesses all geophysical, geological, geochemical and other technical reports. With a budget of $50,000 in 1972–3 for the rehabilitation of depleted pits and quarries, approximately 26 pits were rehabilitated.

Under The Beach Protection Act, all commercial removals of sand and gravel (except by municipalities) from beaches, banks or waters of lakes and streams are licensed by the Section following consultation with Fish and Wildlife field offices, Ministry of the Environment and the Federal Department of Transport. Regular inspections are made of licensed areas to ensure that operations cause no significant erosion or damage to the ecology. The Section audits all mining claim recordings from the mine recording offices in the Province.

PUBLIC LANDS SECTION

In the administration of public lands, other than mining lands, the emphasis is changing from land disposition to management. Land management includes:

Allowing the public to use and enjoy public lands and waters wherever possible;

Minimizing conflicts between user groups;

Reserving areas for future public or government purposes to protect unique or sensitive features or to preserve the natural wilderness;

Zoning areas for or against certain uses;

Controlling garbage, litter, dumping and dredging; and

Removing unauthorized occupations of public land.

In territory that is not municipally organized, control is exercised over uses and development of privately owned land through the designation of Restricted Areas under Section 17 of The Public Lands Act. Twenty-two areas, comprising more than 12,000 square miles, have so far been designated.

When land is to be disposed of, the Section prescribes terms and conditions in accord with land-use plans for the area. In unorganized territory, leasehold tenure is usually prescribed.

Price is based on the appraised market value of the land.

Annual rent is derived from the Regulations or based on ten per cent of the land's value.

Improvement requirements are imposed to ensure quality development, for the purpose for which the land was granted, within a specified time.

Land is disposed of by sale, lease, easement, licence of occupation, or land use permit, or by vesting order when transferred to another agency of government.

In the case of cottage lots for private use, tenure is by lease only. These lots are available only in registered subdivisions and may not be leased to non-Canadians until they have been available for lease to Canadians and landed immigrants for one full year.

LAND USE CO-ORDINATION BRANCH

During 1973, the Branch continued its work of co-ordinating Ministry planning, assisting other ministries and municipalities with land use plans, and reviewing development proposals from individuals and outside agencies.

LAND USE PLANNING SECTION

The major planning effort within the Ministry continued to be the preparation of the Strategic Land Use Plan. Both main office and field staff were involved with the collection and analysis of data and the formulation of land use policies.

At the local planning level, the most significant project was the preparation of a General Land Use Plan for the Lake of the Woods area.

Participation with other ministries and agencies on land use planning became increasingly important in 1973. The Branch contributed to planning projects initiated by the Ministries of Transportation & Communications and Treasury, Economics & Intergovernmental Affairs as well as Ontario Hydro. In addition, close co-operation was required with the Ministries of Environment, Industry & Tourism, and Agriculture & Food.

The field staff was closely involved in assisting many municipalities with official plans, particularly in several of the new regional municipalities.

Finally, as a result of Ministry reorganization, the former District Advisory Committees were restructured into four new Regional Advisory Committees – one for each of the four northern regions.

LAND USE LIAISON SECTION

During 1973, the main activity involved the formulation of policies for the Strategic Land Use Plan. Meetings were held with other Branches of Natural Resources as well as with other Ministries to determine their land use

policies. These policies were reviewed by main office and field staff to assist in policy integration for the Province as a whole, and refinement for the planning regions.

The "Guidelines for Land Use Planning" was revised during this year, and a second edition was published.

MUNICIPAL PLAN REVIEW SECTION

As well as the normal review of plans of other agencies that might have an effect on the Ministry achieving its objectives, the Section concentrated on two major projects. The first was the preparation and publication of a "Plan Review Handbook" for use by Ministry staff. The second was the review and revision, in co-operation with Ministry staff and involving outside agencies, of the policies and procedures for hazard land mapping.

SURVEYS AND MAPPING BRANCH

The Surveys and Mapping Branch provides topographical, cadastral and capability descriptions of the land base.

The Cartography Section produced planimetric, geological and other thematic maps from field surveys undertaken by the Ministry.

The Inventory Section provided inventory data for the various forest stands on areas in northern Ontario. Information concerning the land classification, and timber use, recreation and wildlife capability was collected in northern Ontario. All information was displayed on maps at various scales.

The Drafting Services Section provided drafting, mapping and graphics support services to Ministry programs.

The Control Surveys Section, newly created, has an objective to install and manage a provincial system of co-ordinate control surveys, to regulate standards and performance of control surveys, and to enter into agreements for the performance of surveys and maintenance of co-ordinate control monuments.

The Cadastral Surveys Section performed, or obtained through private surveyors, resurveys of township boundaries and surveys of Crown land prior to their disposition under The Public Lands Act and The Mining Act.

A Task Force on Geographical Referencing has been created to define one comprehensive system which permits visual and rapid geographic correlation of the physical properties, resources, legal status and use of the land in the Province of Ontario, and to determine alternate ways for the implementation of this system.

The Ontario Centre for Remote Sensing was created to provide special-mission aerial photography and interpretation of air-borne and space-borne imagery to the Provincial Government, to co-ordinate remote sensing activities within the Province, and to offer a source of remote sensing information, including a library of satellite imagery, to the general public.

The Ontario Geographic Names Board provided an accurate, standardized, geographical nomenclature for all official maps and charts of Ontario.

FIELD SERVICES DIVISION

FOREST FIRE CONTROL BRANCH

A teotal of 1,111 forest fires burned 8,913 acres in Ontario during the 1973 fire season. An additional seven fires occurred within the fire district but outside the area of intensive protection. These fires burned 2,595 acres.

Fire occurrence throughout the 1973 season was relatively low. Two minor peak periods were experienced. The first period occurred from April 16 to 29 when a total of 181 fires were reported. During the latter part of July, 323 fires were reported over a span of two weeks. The peak occurred on July 25 with a total of 46 fires burning in the province. The largest fire during the past season burned 800 acres. In late May, a 600-acre fire burned adjacent to the Town of Gogama. It was not necessary to evacuate the town.

Lightning accounted for sixteen per cent of 1973 fires and fifty per cent of the area burned.

During the 1973 fire season, five Ministry-owned Tracker aircraft were employed on fire bombing operations. The Trackers were used for both initial attack and support action. They were based at the Dryden and Sudbury Fire Centres but also operated from other retardant bases when necessary. For a short period, two A-26 and one Canso aircraft were hired to supplement the air attack capability in Northwestern Region.

FIRE PREVENTION

Prior to the 1973 fire season, a series of twenty newspaper ads containing fire prevention messages were prepared by the Ministry. The ads were distributed to all Districts for use in local newspapers throughout the fire season.

In the fall of 1973, a series of ten 30-second television commercials were produced for distribution in 1974.

TRAINING

Two four-week courses in basic fire suppression (Fire Suppression I) were held in Ontario during the past fire season. A total of forty-three people completed the course.

The fourth annual advanced fire management course (Fire Suppression II) was presented to twenty-six candidates in February and March, 1973.

Two one-week courses in basic fire weather were held with the co-operation of the Atmospheric Environment Service. A total of forty-nine people completed the course.

A week-long Tracker Pilot's Training Course was held prior to the fire season to introduce, study, discuss, practice and assess the practical aspects and techniques of retardant fire bombing. The candidates on the course included five pilots and four Regional Air Attack bosses.

DEVELOPMENT WORK

Field evaluations of various items of forest fire control equipment were made during the 1973 fire season. These included: field test of synthetic fire hose, operational evaluation of the Gorman-Rupp pump, modification of

fire hose packaging methods, evaluation of a lightning storm tracking system, and field test of a remote sensing weather system.

AIR SERVICE BRANCH

The Ministry fleet of 43 aircraft operated out of 19 bases of which eleven were open the year round.

During the year, Ministry aircraft flew a total of 14,033 hours and delivered loads that totalled 16,102,168 pounds.

Leased helicopters flew a total of 2,148 hours.

Forty-one mercy and emergency flights were made to rescue ill and injured persons from isolated locations. These flights accounted for 81 flying hours.

ENGINEERING SERVICES BRANCH

The Branch supplied support in the aspects of Ministry programs requiring professional engineering, engineering technology, and construction expertise. Projects undertaken included reports, pre-engineering, and the design, construction and maintenance of dams, docks and navigation locks and other hydraulic structures or facilities, as well as improvements to flow channels and dredging.

PRE-ENGINEERING AND DESIGN

Projects included dams at Atikwa, Clarke, Clearwater West, Fox, Graham, Hinsburger, Loxton, Sturgeon and Twenty-Seven lakes. Other projects included Chatsworth Trout Rearing Station, Glenora Great Lakes Fisheries Station, Nonquon Wildlife Management Area, beach protection at Darlington and Wheatley Provincial Parks, Huntsville Navigation Locks, a fish pass at Lakehead University, ponds at Mount Pleasant, a pier at Normandale, tower #14 at Parry Sound, shore protection at Moosonee, and docks at numerous locations.

CONSTRUCTION

Staff completed the construction or reconstruction of water control structures at Esnagi Lake, West Harry's Lake, Wakami River, Boundary Marsh, Blind River, Onion Lake, Tiny Marsh Dyke and Methuen Lake; Keewatin Boat Passage between Lake-of-the-Woods and Winnipeg River; Bass Lake Sewage Lagoons; bridges at Fitzroy Provincial Park, Westport and Kowkash; shore protection works at Peche Island, Pelee Island, Fox Estate, Wilmot Creek, Thunder Bay Nursery and Nancy Island; retaining walls at Lake St. Clair Management Unit Station, Thunder Bay Air Service and at Chapleau; and fishways at Corbett's Dam and Denny's Dam.

A drainage and pumping system was installed at Tremblay Beach Provincial Park. A parking lot with an access road was constructed at Penetanguishene Royal Naval and Military Establishments Site.

INSPECTION

Inspections were made of the following Ministry-owned and operated facilities: 108 dams, 24 docks, 9 fish hatcheries, 4 navigation locks and 2 tree nurseries. Reports were prepared and recommendations made to either repair or proceed to construction at some future date in each instance.

MAINTENANCE

Maintenance of hydraulic structures and docks was scheduled on the basis of condition determined from inspection and reports submitted from districts. Routine maintenance was carried out on locks at Huntsville and Port Carling along with other miscellaneous projects. Maintenance of dams was carried out at the following locations:

Blindfold Lake
McNamara Lake
Graham Lake
Harris Lake
Denny's Dam
Bala Dam
Gooseneck Lake
Blind River
Sandfield
White River
Halfway Lake
Nosbonsing Lake
Rydal Bank
Charlton
Hollow Lake
Dollars Dam
Stumpy Lake
Knoepfli's Dam
Chiblow Lake
Port Sydney
White Lake
Lyndhurst
Pike Lake
East Bull Lake
Barlow Lake
St. Ola
Aylen Lake
Talon Lake
Larder Lake
Lillabelle Lake
Salerno Dam
Whitney Dam
Joe Lake
Duncan Lake
Penage Lake
Diamond Lake
Mildmay Dam
Nepewassi Lake
Kinmount
Baptiste Lake
Weslemkoon Lake
American Trail
Onion Lake
Labitiche (Gull) Lake
West Spanish (Armstrong) Lake

Docks included:

Port Carling
Long Lac
Pembroke
South Baymouth
Apsley Lake
Wiarton
Wawa
South Porcupine
Kerr Lake
Big Trout Lake
Lauzon Lake
Tweed Airbase
Deer Lake
Missinabie
Port Sandfield
Lost Lake
Macdiarmid
Pelican Portage

IMPROVEMENTS TO FLOW CHANNELS

Improvements to flow channels, by clearing debris and dredging by widening and deepening of flow channels, was carried out to increase the efficiency in discharging water from Ministry-owned dams, to improve flow between controlled waters, or to decrease downstream flooding resulting from the Ministry's operation of a dam. This year, improvements were undertaken at Magnetawan River, Snake River, Whitewater Lake, Sasajewan, Deer and Round Lakes, Palmer Rapids and Talon Lake.

WATER RESOURCES ENGINEERING

Responsibility for the management of water resources is undertaken through administration of The Lakes and Rivers Improvement Act. Sixty approvals of sites and plans for dam construction under the Act were granted. Four investigations were made of water regulation problems resulting from dam construction.

ENGINEERING CONSULTATIONS

Consultation services are provided to solve problems requiring engineering knowledge and to facilitate design, construction and reconstruction of many types of Ministry facilities. In cases where specialized technical expertise is required, consultants are engaged, their work

defined, and their progress monitored. Projects included the design of a public observation tower at Parry Sound, a prototype fire hose dryer, a 100-man camp near Atikokan, and a workshop near Midland.

Advice and information have been provided on a number of other projects including plans for a fisheries research facility at Maple, and Regional Operations Centres at Thunder Bay, Dryden and Huntsville.

ACCESS ROADS

A total of 3,811 miles of forest access, logging access and Ministry service roads were maintained.

Under Part II of The Public Lands Act, 40 roads comprising 626 miles are designated as public forest roads for the purpose of exercising control by Ministry personnel.

With the addition of six roads in the Kapuskasing District, 413 miles of private forest roads constructed by forest industry are now under agreements which permit public use for recreation and travel.

MECHANICAL EQUIPMENT

A fleet management program was implemented in 1969 to provide management, at all levels, with computer print outs of information such as vehicle performance, frequency of repair, annual repair costs, accident costs, cost per mile, and replacement information. It is in effect north of the French and Mattawa Rivers. The system has proven to be a valuable management tool for cost comparison of Ministry establishments versus commercial and will influence future decisions regarding additional facilities.

The Ministry fleet comprises 1,500 motor vehicles, approximately 218 tractors and heavy construction equipment, 550 equipment trailers, 457 snowmobiles together with motorcycles, boats and all-terrain vehicles.

An integral part of the equipment management function of the Branch consists of development of policy on equipment repair, acquisitions and replacements, equipment markings and colour, licensing, insurance coverage, and bulk purchasing. In addition, minimum standards for operation and general appearance of motor vehicles and trailers have been established to ensure safer, efficient and dependable operation.

A new vehicle colour was introduced. It is called Field Green and is similar to the policy field green established for the Resources Development Policy Field in the Ontario Official Identity Manual. The two-tone effect will continue using Indian Ivory. These colours have been extended to include tractors and construction equipment with a separate identity for watercraft.

Motor vehicle identification markings have been redesigned using a full marking for each side and logotype for the rear, and continuing the use of the vehicle assigned number as in the past. A variety of full and logotype markings are also available for all other types of equipment.

SIGN PRODUCTION

Co-ordination of the Ministry sign program was implemented in accordance with policy established by the Ministry Sign Committee. A total of 20,952 signs of various types was produced by the sign shop at Huntsville to fulfil the demand of field offices throughout the Province.

GREAT LAKES SHORELINE

An expanded extension service available to the public was maintained as one of the provincial shoreline property assistance programs established by Cabinet. Under this program, engineers are made available on request to inspect shore properties along the Great Lakes shoreline and suggest to the owners methods by which they may undertake to protect their properties against erosion.

Ontario's responsibilities were carried out under an agreement entered into with the Government of Canada for the undertaking of a joint Canada-Ontario Great Lakes Shore Damage Survey which is aimed at gathering basic data to assist both governments in making decisions about long-term shore protection.

CONSERVATION AUTHORITIES BRANCH

During the 1973–4 fiscal year, the Branch co-ordinated assistance, in co-operation with Ministry regional offices, to Conservation Authorities for capital projects and administration of programs, and also provided technical advice on particular projects as well as watershed studies and reports. The Branch reports to the Assistant Deputy Minister for Lands and Waters.

Grants to the Conservation Authorities through the Branch in the fiscal year totalled $29,875,839. Specific amounts were as follows:

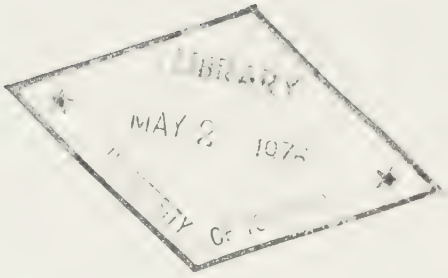
Water control program	$11,778,333
Conservation Areas program	10,604,462
Authority administration	2,819,126
S.W.O.R.D. Program	2,031,924
Lake Ontario Waterfront Program	1,815,510
Conservation Assistance and Sundry Capital Program	826,484

The Branch also administered a grants program under The Parks Assistance Act and made $397,278 available to municipalities for acquisition and development of approved parks during the year.

Branch administration costs during the year totalled $1,365,263, made up as follows:

Field Services	$504,359
Engineering and Technical Services	486,183
General Administration	336,959
Junior Conservation Program	37,762

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Ontario

Ministry of
Natural
Resources

Annual Report of the Minister · 1975

ANNUAL REPORT

OF THE MINISTER
OF NATURAL RESOURCES
OF THE PROVINCE
OF ONTARIO
FOR THE FISCAL YEAR
ENDING MARCH 31, 1975

TO HER HONOUR,
The Lieutenant-Governor
of the Province of Ontario

MAY IT PLEASE YOUR HONOUR
The undersigned begs respectfully to present to your Honour the Annual Report of the Ministry of Natural Resources for the fiscal year beginning April 1, 1974, and ending March 31, 1975.

Leo Bernier

LEO BERNIER
Minister

Ontario

Ministry of
Natural
Resources

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Related detail of interest is reported in The Mining Review, 1974, and Statistics, 1975.

DIVISION OF FORESTS

FOREST RESEARCH BRANCH

The Branch provides scientific and technical information to improve the management of forest resources in Ontario.

The hybrid poplar program deals with breeding and testing for fibre and biomass production in short rotations of one to 10 years, and with the growing of poplar for lumber on lowland and upland sites in southern Ontario. In northwestern Ontario, poplar studies deal with the immediate problems of regenerating aspen by suckers and with long-term management. Site relationships, root development, nutritional aspects, nutrient content and wood quality are being examined.

In spruce research, the production of improved seed of black and white spruce for artificial regeneration is a major consideration. This program includes selection of seed production areas and plus trees, mass production of superior stock through vegetative propagation, provenance studies, and the effect of fertilizers on seed production. Genecological and productivity studies in the spruce genus are aimed at: elucidating the contribution of species, provenances and hybrids in productivity systems; determining genetic variability, crossability and heritability; evaluating the effect of seed zones (regions) in productivity systems; and determining the validity of moving spruce stock between regions. Studies on the ecological productivity of the spruce forest ecosystem have been accepted as part of the Canadian contribution to the International Biological Program (IBP). Growth and foliar nutrient measurements were made in black spruce stands of the Interprovincial Forest Fertilization Program.

Genetic improvement of eastern white pine is aimed at improving the growth characteristics and resistence to blister rust and weevil through selections from natural stands and breeding with exotic pines. For hard pines, improvement of growth characteristics is sought by development of hybrids. Methods to identify hybrid species through needle anatomy are being developed.

Stem and root growth of red pine is studied in relation to moisture supply in sandy soils with or without a water table. Several fertilizer experiments in red pine are in progress. Yield tables for managed red pine have been reexamined in light of the much heavier, thinning regimes now practiced.

For forest nurseries, a germination and transplanting technique was developed to avoid severe shock to young germinants. Other nursery programs dealt with determination of frost hardiness and dormancy of nursery stock, internal moisture response of stock, changes in nutrient content of stock after planting, and handling and outplanting of nursery stock.

Growth data from mixed hardwood stands on a wide variety of sites are being analyzed. Clonal silver maple material was propagated and outplanted in lowland areas. Ecological and physiological factors, which control the quantity and quality of tolerant hardwood forests of south-central Ontario, are being studied in the laboratory and the field.

Assistance was given to programs involving mapping and classification of forest fuel, and to the Chemtard program, which is concerned with the assessment of chemical suppressant and retardant materials and their application to forest fires.

FOREST MANAGEMENT BRANCH

The objective of the Branch is to produce optimum and continuous industrial, social and environmental benefits from public forests, and to encourage and assist similar production on private lands in Ontario.

TREE SEED

Inventory, June 1, 1974	2,421,000,000 viable seeds
Distributed 1974-75	826,000,000 viable seeds
Collected	13,886 hectolitres

This collection is three times the collection made in 1973. However, seed is still in short supply and increased collections will be required in 1975 to meet requirements of the production policy.

TREE IMPROVEMENT

Plus trees, Collected	6,300 scions
Planted	3,200 grafted trees
Seed Collection Areas*	3,150 acres
Seed Production Areas	570 acres
Seed Orchards	180 acres

**A new term used to describe superior stands of jack pine which are reserved and logged periodically to supply the seed required, and regenerated with the same seed source to maintain them as gene pool reserves.*

This program is designed to improve seed quality and increase the quantity of available tree seed to meet the requirements of the production policy.

PLANTING STOCK

Distribution, Conifers	57,342,900
Hardwoods	2,451,550
Total	59,794,450
Production Targets Seeded	74,279,000

The reduction in planting stock distribution and production is due to an increase in other methods to obtain regeneration on Crown lands (and meet production targets) such as direct seeding, modified harvest cut, etc. (See table on regeneration and tending).

DEVELOPMENT

Field tests were carried out in Northeastern, Northern and North Central Regions on the Ontario Mark III planter throughout the summer months.

A second prototype of a multi-row nursery stock lifter was built for the Ministry by Hovey Associations of Ottawa in readiness for testing during the spring of 1975.

Work began on converting a used cigarette machine, which was obtained without charge from Imperial Tobacco Company, Montreal, to a machine for producing soil-filled containers for growing tree seedlings.

Other new equipment designed and built included a twin-flail scarifier and V-blade for site preparation, and a packing wheel attachment for a Bracke cultivator.

PRIVATE LANDS

The Woodlands Improvement Act	No. of Agreements	Acres
New Agreements activated 1974-75	461	17,215
Agreements in effect to March 31/75	3,675	190,847
Number of Trees Planted		7,955,515

(See table on regeneration and tending for silvicultural operations, under the W.I.A.)

These operations are carried out on private land under Woodland Improvement Act agreements. The acreage treated is an integral part of forest production targets, particularly in Southern Ontario, where there is no significant Crown land area.

ADVISORY SERVICES

1. Number of public inquiries serviced	40,001
2. Number of field inspections made	5,478
3. Number of forest management programs prepared	429
4. Total area for which management programs were prepared	30,245 acres
5. Trees purchased and planted by private landowners	9,886,524
6. Timber marked for harvesting:	
Sawtimber	2,546,104 cu.ft.
Pulpwood	12,528 cords
7. Activities with youth groups	350 groups
8. Public education activities and services	1,495 items
9. Days of forestry instruction provided to schools, colleges, universities	482 days

The above data are a measure of the forestry extension program offered to all landowners. A change in landowner management practices is desired to ensure the establishment and maintenance of private forests for the production of forest products and forest values.

AGREEMENT FOREST

Agreement with	Acres Added	Acres Released	Total
1 Government of Canada			3,532.00
24 Conservation Authorities	427.43	107.00	92,282.97
19 Counties	1,069.23	126.78	144,918.07*
11 Townships			3,229.24
5 Regional Municipalities	8.22	8.35	11,953.36*
60 Totals	1,504.88	242.13	255,915.64

**Acreage figures have been adjusted because of changes from Counties to Regional Municipalities.*

The above agencies have forest management agreements with the Minister under authority of the Forestry Act. These forests are an integral part of forest production targets, of particular importance in districts with no significant Crown land areas.

PEST CONTROL

The most destructive of all the forest insects and diseases in 1974 was the spruce budworm which infested balsam and white spruce trees on a gross forested area of 24 million acres. Most of this acreage was in the north-central, north-eastern, and south-eastern portions of the Province. After a careful assessment of values to be protected, spraying operations to control the insect were confined to approximately 48,000 acres of Crown land. The insecticide used was Zectran, at a rate of 1.2 ounces of active material in 19.2 fluid ounces of spray mixture per acre. In addition, a small acreage was sprayed with the biological bacillus insecticide.

Other pest problems requiring control treatments were the white pine weevil, several species of sawflies of pines and spruce, white grubs, the blister rust of white pine, the annosus root rot, and mice. A total of 10,000 acres was treated to control these problems.

CLASSIFICATION OF CUT-OVER FOREST ON CROWN AND PATENT LAND, 1974-5

Areas in Acres

Cutting Method	Regeneration Required	Satisfactory Natural Regeneration	Total
Clear Cut	240,887	116,467	357,354
Selection Cut	—	61,720	61,720
Partial Cut	—	57,260	57,260
Total	240,887	235,447	476,334

Areas in Acres

Treatment	Crown Land	Agreement Forests	W.I.A.**	Sub-Total	Other Patent Lands	Total
REGENERATION						
Planting Nursery Stock	55,952	1,370	10,167	67,489	6,419	73,908
Container Stock	5,353	–	–	5,353	–	5,353
Seeding	59,869	–	–	59,869	–	59,869
Modified Harvest Cut	19,906	135	–	20,041	–	20,041
Scarification	11,314	–	6	11,320	–	11,320
Seed Trees	11,519	–	–	11,519	–	11,519
Total	163,913	1,505	10,173	175,591	6,419	182,010
TENDING						
Hand Cleaning	12,446	1,468	34	13,948	25	13,973
Herbicide Spraying	21,241	766	380	22,387	–	22,387
Thinning Improvement Cuts	28,600	6,800	5,114	40,514	1,441	41,955
Pruning	1,341	830	576	2,747	–	2,747
Fertilization Drainage	485	1,002	44	1,531	–	1,531
Total	64,113	10,866	6,148	81,127	1,466	82,593
TOTAL AREA TREATED	228,026	12,371	16,321	256,718	7,885	264,603
Site Preparation For Seeding, Planting or Modified Harvest Cutting	76,863	778	2,310	79,951	25	79,976
*Tree Marking	87,269	6,054	6,708	100,031	8,209	108,240

**Marking, previously included in tending, is shown separately to avoid distortion of total tending and total area treated.*

***W.I.A. is private land managed under the authority of The Woodlands Improvement Act.*

TIMBER SALES BRANCH

The major responsibility of the Branch is the orderly disposition of the Crown timber resource through the administration of major sections of The Crown Timber Act. This is accomplished by the review and approval of forest management plans, the allocation of Crown timber to forest industry through various methods, the licensing of forest industry mills, the measurement of the volume of harvested wood, and the monitoring of the relatively constant and the variable factors affecting the viability of the provincial forest industry.

Forest Management Plans

Forest management plans provide the broad framework within which forest operations are conducted. More detailed operating plans for shorter time periods identify the stands to be harvested, regenerated and tended, and the roads and other improvements required on the Crown, company and agreement forest management units.

STATUS OF MANAGEMENT PLANS

(Areas in Square Miles)	Forest Management Units					
	Crown		Company		Agreement	
	No.	Area	No.	Area	No.	Area
Approved Standard Plans	40	32,121	2	6,653	26	197
Plans being prepared and revised	31	44,653	29	72,694	34	201
Inventory required	8	9,041	–	–	–	–
Inactive and inaccessible or not under plans	9	24,292	–	–	–	–
Total	88	110,107	31	79,347	60	398

Timber Allocation

Crown timber is allocated to the provincial forest industry with respect to sustained-yield forest management and industrial requirements. Crown timber harvesting licences provide the forest industry with the legislative authority to harvest timber on Crown land on an annual, allowable harvest basis. The licences take one of several major forms and are specific as to geographic area, tree species, volumes, stumpage and other charges, and various control measures.

CROWN TIMBER LICENCES

Areas under Crown Timber Licences As at March 31, 1975	Number	Square Miles
Under Section 2, Crown Timber Act	45	280.5
Under Section 3, Crown Timber Act	424	96,923.8
Under Section 5, Crown Timber Act	11	51.7
Total Area under Licences	480	97,256.0

Forest industry mills are licensed to operate with respect to the Crown and private timber supply available in a specific locality.

MILL LICENCES	1971	1972	1973	1974
Sawmills, 8 hour capacity				
Lumber, capacity over 50 M fbm	35	41	71	60
Lumber, capacity 10 to 50 M fbm	79	88	97	104
Lumber, capacity under 10 M fbm	560	536	542	570
Miscellaneous	115	83	49	40
Veneer Mills	27	29	25	26
Pulp Mills	24	23	24	24
Total	840	800	808	824

Wood Measurement

The measurement of harvested wood, or scaling, determines the volume of wood removed from Crown land and Agreement Forests. It is the basis for public revenue determination and forest production statistics related to the forest industry. Only Ministry Licensed scalers may carry out this function. New measuring techniques, such as weight and sample scaling, are being continually developed and improved. Approximately 43 per cent of the wood is measured by the companies under a domestic scaling licence. Approximately 21 per cent of the total wood cut is weight scaled.

Forest Industry Development

This section follows the growth and development of the many components of the provincial forest industry by monitoring the demand for and supply of wood products and the pattern of world trade in these commodities, and by analyzing resource taxation and pricing to maintain a viable industry. It assists in industrial expansion and regional development through industrial liaison, policy development, and economic analyses.

PULP CHIPS

	ONTARIO PRODUCTION		CONSUMPTION OF ONTARIO CHIPS	
Ontario 1974	No. Mills	Volume b.d.t.	No. Mills	Volume b.d.t.
Ontario	112	1,457,195	17	1,199,440
Quebec	–	–	5	180,242
Manitoba	–	–	1	5,535
U.S.A.	–	–	7	71,978

VOLUME AND VALUE OF WOOD CUT FROM AGREEMENT FORESTS, 1974-5

Products	Cubic Feet	Value
Sawlogs, Poles, Posts	326,033.52	$ 87,978.36
Fuelwood	103,020.85	8,992.24
Pulpwood	1,400,971.70	68,495.01
Miscellaneous		1,904.66
Total	1,830,026.07	167,370.27

VOLUME AND VALUE OF WOOD CUT FROM CROWN LANDS, 1974-5

Tree Species	Volume (Cubic Feet)	Bonus	Crown Dues	Stumpage Value
SOFTWOODS	$	$	$	$
White Pine	16,658,218.53	589,661.85	922,959.32	1,512,621.17
Red Pine	7,218,386.99	235,145.83	397,334.47	632,480.30
Jack Pine	154,346,139.65	365,874.65	7,788,314.69	8,154,189.34
Pine, Mixed	12,687.95	231.30	541.36	772.66
Spruce	249,506,451.58	793,538.27	12,836,450.22	13,629,988.49
Hemlock	1,204,118.74	14,516.63	68,245.58	82,762.21
Balsam	15,541,294.71	70,990.58	769,808.16	840,798.74
Cedar	478,273.36	9,428.09	22,996.92	32,425.01
Tamarack	165,429.64	1,129.48	8,814.34	9,943.82
Softwoods, Mixed	136,240.70	387.62	3,042.76	3,430.38
Softwoods, Total	445,267,241.85	2,080,904.30	22,818,507.82	24,899,412.12
HARDWOODS				
Maple	8,268,159.35	168,476.24	568,582.03	737,058.27
Yellow Birch	4,023,607.03	220,752.90	326,650.56	547,403.46
White Birch	2,764,271.42	37,495.33	32,444.42	69,939.75
Oak	247,546.26	9,010.18	15,153.09	24,163.27
Beech	354,103.53	10,588.80	24,321.98	34,910.78
Ash	30,156.99	1,205.83	1,846.07	3,051.90
Elm	80,071.27	4,524.32	6,673.19	11,197.51
Basswood	274,661.61	9,974.67	16,402.60	26,377.27
Butternut	951.43	35.55	66.13	101.68
Cherry	18,605.64	309.61	1,695.71	2,005.32
Poplar	38,031,846.74	145,164.12	426,397.26	571,561.38
Hardwoods, Mixed	13,398,973.30	87,680.66	151,012.65	238,693.31
Hardwoods, Total	67,492,962.23	695,218.21	1,571,245.69	2,266,463.90
Total	512,760,204.08	2,776,122.51	24,389,753.51	27,165,876.02

DIVISION OF MINES

MINERAL RESOURCES BRANCH

The prime objective of the mineral Resources Branch is to assure the orderly development and optimum use of provincial mineral resources in line with the Ministry's policy of broadening the base of mineral development and processing in Ontario. The most important function of the Branch is to provide the Minister with in-depth researched information and mineral policy options as well as to ensure equitable mining tax assessments.

Major areas of responsibility for the Branch are established as follows:

(a) Determination of an inventory of the province's mineral resources and its commercially viable reserves;

(b) Continuing analysis of the reserve position against present and projected world supply and demand for minerals;

(c) In-depth studies of mining and exploration companies and their decision-making process;

(d) In-depth mineral commodity studies on each mineral element in provincial reserves with priorities set for nickel, copper, zinc, iron ore, uranium and precious metals;

(e) Economic studies of metal and mineral markets and factors affecting Ontario's output;

(f) Continuing preparation of programs to assist in mineral resource development;

(g) Analysis of the effectiveness of present public policies in respect of mineral resource development;

(h) Federal-Provincial liaison on mineral resource problems;

(i) Studies on economic behaviour of multi-national mineral resources companies;

(j) Long-term planning of resource development;

(k) Development and administration of mineral resources policies;

(l) Detailed analysis of the existing system to develop a sound mineral taxation policy; and

(m) Administration of The Mining Tax Act.

Petroleum Resources Section

The Petroleum Resources Section is responsible for a wide range of activities associated with the exploration, drilling and production of oil and gas in Ontario. These functions include the conservation and proper development of Ontario's petroleum resources, environmental controls, and safety. Scientific data, both geological and engineering, are collected and processed for all wells drilled in the province, and such data are used to prepare various publications, reports and maps to encourage the proper and equitable development of Ontario's petroleum resources.

The Section's staff of 19 includes qualified geologists, reservoir engineers and inspectors. As an integrated regulatory and scientific agency, it is able to advise Government on all problems arising from legislation, and the wide variety of technical and scientific problems related to oil and gas exploration and development in both Ontario and other areas of Canada.

Under authority of The Petroleum Resources Act, all information collected in the drilling of wells must be submitted to the Section. This information is submitted as analyses, engineering and geological reports, and reports required of the various licences issued. All data are validated by the inspection staff, and interpreted and transcribed by the geologists and engineers into more readily accessible forms by way of hard copy documents, microfilm and computer output for both internal and industry use.

The Section, through its draughting unit, also compiles and constructs 15-minute quadrant maps for southwestern Ontario showing all oil and gas wells and regulation spacing areas. These are updated weekly and made available to industry.

The geological staff and the repository facilities are located in London, and during the year were administratively placed within the regional concept, although their technical functions remain under main office direction.

Core and drill-cutting samples from all wells drilled are forwarded to the repository where they are processed, examined and stored. The repository is utilized by the petroleum resources geologists and engineers (to research material for various publications and annual reports), and by industry and universities.

To the end of 1974, the Section had issued 2,498,270 acres under licence in lake Erie and 175,955 acres under production leases to a total of seven operators.

During the year, 170 wells were drilled, including 53 wells in Lake Erie. Off-shore operations are closely scrutinized, and the inspection staff normally operates on a 24-hour basis, staying aboard the drilling vessel during much of the operation.

Since 1858, more than 100,000 oil and gas wells have been drilled in Ontario, and many have never been properly plugged. As a result, the inspection staff through government funding, administers the plugging of hazardous wells on priority basis, and in turn work closely with T.E.I.G.A. and other agencies in this regard.

All data and information acquired during exploration, drilling and production operations are submitted on a monthly or annual basis as required by regulation. Much of the statistical data and other pertinent information from Statistics Canada are processed for the Section by the Energy Studies Section of the Ministry of Energy. These data are in turn published in the Section's annual report.

Metallic Minerals Section

The main objective of the Section is to provide effective metallic mineral policy options for the Division of Mines.

The secondary objective is to provide effective and practicable solution alternatives to metallic minerals problems as they arise.

Detailed analysis of metallic minerals commodities produced in Ontario are continuing. These review supply and demand relationship, price movements, technology, uses and problems on a world-wide basis since minerals and metals are sold on world markets.

A report entitled "The Impact of Taxation and Environmental Controls on the Ontario Mining Industry" was released.

A considerable percentage of the Section's time is expended in detailed analysis and recommendation of alternative solutions for problems that affect the metallic minerals sector of the economy.

The problems range from assisting on task forces and committees to review of external consultant's reports and problems related to The Ontario Mining Act and The Mining Tax Act. Many of these problems command evaluation of the commodities involved and as such form the initial input into broader commodity studies.

Liaison has been established with the federal government and the U.S.A. and state governments on mineral matters of mutual concern. As well, there is continuing contact with mining companies and other public and private agencies.

The Section participated in the assessment in detail of Ontario's uranium resources during 1974. Expansion of this initial mineral inventory into other important metallic mineral commodities is on-going. This will be a long-term study and eventually form an important part of the data base for analysis and formulation of policy options.

Industrial Minerals Section

The Section has two major functions: Providing the input necessary to fulfill the role of the Branch in presenting industrial (non-metallic) minerals policy options for the Province; and administering The Pits and Quarries Control Act.

The policy function will be developed on a progressive basis to deal in turn with each industrial mineral and rock commodity by implementing the processes outlined as major areas of responsibility for the Branch.

The Section's function in administration of the Act involves a dual role. On the one hand, consultation and guidance are provided to the Ministry's field offices which, through their pits and quarries inspectors, are responsible for implementing the requirements of the Act. On the other hand, the Section processes applications for, and renewals of, pit and quarry licenses received through the field offices for recommendation to the Minister.

A total of 124 townships were designated under the Act as of March 31, 1975. Understandably, the majority of staff time has been taken in liaison with the inspectors, processing the many applications, explaining the Act and its purposes to applicants in personal and telephone interviews, and participating in various relevant meetings.

By March 31, 1975, a total of 862 licences had been issued.

Minerals Economics Section

The Section has absorbed the pure economic research functions formerly carried out by the Metallic Minerals Section. Its responsibilities are as follows.

1. Annual survey and preparation of open-file reports on mineral industry operations and mineral industry statistics.
2. Collection and analysis of national and international data on all metals and mineral commodities, prices, markets, consumption trends tariffs, duties and export-import restrictions.
3. Economic and statistical research as an input to the development of mineral policy options. Analyses of the effect of mineral policies on labour and capital markets.
4. The format of the Mineral Information Bulletin for internal use is currently under revision.
5. Administration of economic and statistical research contracts.

In 1973, publication of the annual report on mineral industry operations and the annual statistical report on mineral production of Ontario was suspended, but, the information and the statistical data previously published in these reports have been made available to the interested public on an open file. By the end of the year, the open data file on mineral industry operations was completed for the year 1973, and the statistical data on mineral production of Ontario were tabulated for 1972. There were delays in reporting by some responding mining companies, but statistical data for 1973 have been made available by the end of June 1975.

The Section continued publication of a mineral information bulletin for internal use and embarked on a major project of creating and maintaining a loose-leaf reference handbook giving a total run-down on each Ontario mineral commodity in a world-wide context, and on converting the 1973 output data to the metric system.

The Section also provided services in the field of mineral economics and statistics to ministry staff, other government agencies and the interested public.

Mining Assessment Section

The Mining Tax Act is administered by the mine Assessor who also has the responsibility for the development of alternative taxation policies.

Much of the past fiscal year was spent in the development of The Mining Tax Amendment Act, 1974, and in writing the Regulation thereunder which reflect a major change in government policy toward mine taxation. The previous system, which levied a tax on the profits of producing mines at the rate of 15 per cent if the profit exceeded $50,000, was in force until April 9, 1974. After April 9, taxation was on a graduated scale rising to 40 per cent on those profits which were in excess of a statutory exemption of $100,000 but a more generous system of allowances on profit on mineral processing was also added. A method of tax calculation was provided in the Act to apply to the situation where taxpayers had taxation years ending after April 9, 1974.

During the year, many studies were undertaken on problems arising from the new Act, and 24 assessments were issued.

GEOLOGICAL BRANCH

The Geological Branch provides information on the geology and mineral resources of Ontario to encourage exploration and development of mineral wealth by the mining industry, and as a basis for land-use and transportation-route planning, and the development of non-renewable resource utilization policy.

Geological, geophysical and geochemical surveys identify favourable locations for mineral and aggregate deposits and provide increased knowledge and understanding of the geological history of Ontario. Existing data on mineral deposits are being compiled, and new studies have been initiated. Educational programs and published reports and maps are available to the public.

The Branch administers the Mineral Exploration Assistance Program (MEAP) whereby the Government reimburses an individual or company one-third of the cost of an approved exploration expenditure (maximum $100,000) in any of five designated areas.

PRECAMBRIAN GEOLOGY SECTION

During the summer of 1974, 22 field parties undertook interpretive mapping of rock formations of the Precambrian Shield. A total of 1,400 square miles was mapped at a scale of one inch to one-quarter mile for publication at one inch to one-half mile. Four reconnaissance and compilation projects covering 1,200 miles were carried out for publication at one inch to one mile. Operation Kenora-Sydney Lake, a helicopter supported reconnaissance project, covered more than 6,500 square miles for publication at one inch to four miles. Three compilation sheets (one inch to four miles) were under revision. On the basis of field area location, the geologists of the Section are divided into North Archean, Central Archean, South Archean and Proterozoic mapping groups.

PHANEROZOIC GEOLOGY SECTION

During the summer of 1974, eight field parties carried out mapping projects. One field party completed mapping of the Paleozoic formations of the Fort Erie-Dunnville area. Seven parties mapped the Quaternary geology of the Beardmore, Hawkesbury, Merrickville, Barrie, Wingham, Grand Bend and Grimsby areas. Seven mineral resource surveys were completed at the request of municipalities, and an aggregate resource inventory of the Ottawa-Carleton area was carried out.

GEOPHYSICS/GEOCHEMISTRY SECTION

Geophysical surveys carried out in 1974 included ground magnetic and gravity surveys in the Sturgeon Lake area. Combined geochemistry-Quaternary geology surveys were carried out in the Beardmore-Geraldton, Killala Lake and Prairie Lake areas. A reconnaissance geochemical survey of lake water and lake sediments was carried out in the Elliott Lake area. The section also planned and co-ordinated the following contracted surveys: aeromagnetic survey in the Bamaji-Fry Lakes area, airborne electromagnetic survey in the Matachewan area (funded by the Ministry of Treasury, Economics and Intergovernmental Affairs) and seismic-resistivity surveys in the James Bay Lowlands for preliminary assessment of fossil fuel potential. Development of computer based techniques for the processing and interpretation of geophysical and geochemical data was continued.

MINERAL DEPOSITS SECTION

The Mineral Deposits Section studies deposits of both metallic and non-metallic minerals, their distribution, geology, reserves and potential. An important role is to provide reserve data and resource potential estimates for use in government planning, particularly for land use, parks and transportation corridors, and as background for studies by the Mineral Resources Branch. With the Mineral Resources Branch, the Section drew up an Ontario Mineral Resource Classification scheme and co-operated in the National Uranium Resources Appraisal Program. It also carried out preliminary studies of zinc and iron resources. Studies included a revised Mineral Map of Ontario (prepared with co-operation of the regional geological staff and published), a series of metal distribution maps (uranium-thorium maps published), a series of mineral potential maps, the final volume of Gold Deposits of Ontario, an amethyst guidebook, clay and shale studies, and an industrial minerals study of the Moose River Basin.

SPECIAL PROJECTS SECTION

Government payments under the Mineral Exploration Assistance Program (MEAP) for the fiscal year were $307,963 with a total government expenditure in the past four years of $1,403,547. The Atikokan area was added to the previously designated areas of Kirkland Lake, Cobalt-Gowganda, Geraldton-Beardmore and Red Lake. Section activities included co-ordination of a geological, geophysical and drilling program in the James Bay Lowlands; compilation of Geological Branch publications and exploration activity in selected areas; and preparation of two Open File Reports, one listing occurrences of float, placer gold and indicator minerals for kimberlite and the other covering MEAP through March 31, 1974.

REGIONAL AND RESIDENT GEOLOGICAL PROGRAM

During the 1974-75 fiscal year, Regional and Resident Geologists' offices were maintained at Kenora, Red Lake, Sioux Lookout, Thunder Bay, Sault Ste. Marie, Sudbury, Timmins, Kirkland Lake, London and Richmond Hill. New offices were established at Huntsville and Kemptville.

Regional and Resident Geologists are part of the field organization, responsible administratively to the Region and technically to Geological Branch. Their principal function is to provide a consultative service to the Provincial Government, the people of Ontario, and the mining industry on the geology and mineral deposits of the Province.

GEOSERVICES SECTION

The Geoservices Section includes five units, named below.

The *Scientific Review Office* is responsible for the scientific review, editing and publication of all geoscience reports and preliminary maps. The following were printed during the year:

Geological and Geophysical Reports	11
Open File Reports	21
Miscellaneous Reports and Publications	8
Coloured Geological Maps	26
Preliminary Maps	75
Index Map	1

In addition, 41 reports were in progress and under review, and several hundred figures were drawn by the drafting unit.

The *Geoscience Data Centre* performs tasks related to the gathering, research, compilation and computer processing of geoscience data on mineral deposits of Ontario; indexes publications released by the Geological Branch and reports submitted for assessment work credit; and within its means investigates and improves upon existing data handling systems.

During the year, 1,800 documents were indexed for computerized storage in the Ontario Index to Geoscience Data. These consist of current MEAP reports, assessment work reports (updates and for the period before 1960), Branch geoscience publications up to March 1975 and ODM Annual Reports 1928-1948. Computer retrieval from the Ontario Index produced the base for an Open File Report, Index to Exploration Reports filed in 1974.

The Centre compiled 120 Mineral Deposits Records for iron deposits with reserves, and updated or compiled 41 for uranium deposits. All 170 Mineral Deposit Records for base metals compiled previously were computerized as well as the first 13 Mineral Deposit Records for iron deposits.

The *Geoscience Information Office* conducts classes of instruction on geology and exploration technology, and prepares information pamphlets and guidebooks on the geology of Ontario. A number of mineral education courses, including two field courses, were conducted, and Junior Ranger camps were visited during the summer.

The *Assessment Files Research Office* operates, for public use, a library containing all technical surveys filed

for assessment credit, prospectuses and summary reports received from the Ontario Securities Commission and technical surveys filed in accordance with the Mineral Exploration Assistance Program (MEAP). During the fiscal year, 4,457 enquiries were received, 5,966 control maps were pulled and 10,801 files were retrieved.

The *Technical Services Office* expedites the requisitioning, purchasing, storage and maintenance and cataloguing of all field equipment, vehicles, furniture and scientific instruments for the Geological Branch. In addition, it arranges for the storage of thin sections and rocks submitted by staff geologists.

MINES ENGINEERING BRANCH

The function of the Branch is primarily the administration of part IX of The Mining Act and other codes and regulations dealing with the health and safety of workers. There were 24 engineers on the field staff during the year examining all operations in 107 mines, and 1,700 pits. Besides the investigation of accidents, fires, unusual occurrences and numerous union complaints, routine inspections, and examination of engineering design for underground and surface plants were carried out.

There were 24 fatal accidents in a work force of 44,673, giving a rate of 0.29 deaths per million work hours.

Compensable accident frequency of 52 per million work hours rose slightly. the number of shaft hoisting accidents decreased by about 10 per cent. Accidents with mobile equipment underground rose slightly.

During the year, the world's largest raise, 25 feet in diameter and 2,000 feet in length, was completed without a lost time accident. This was carried out to improve ventilation in one of the province's large uranium mines.

In the Elliot Lake mining area, surveys were carried out for dust and radiation in every working place. At the same time, a health survey was conducted involving over 1,000 workers. Sputum tests for the early detection of cancer were also done for many underground workers on a voluntary basis.

A Royal Commission under Dr. James Ham was set up to investigate the health and safety of miners in Ontario. The Commission held hearings throughout Ontario, beginning in early January, 1975. The report of the Commission is expected in early 1976.

Research programs in progress were as follows.

(1) In partnership with the Ontario Mining Association – completed development of an electronic device to locate broken wires in hoisting ropes. The Device is now ready for manufacturing.

(2) At the Haileybury School of Mines – to test safety devices on mine shaft conveyances and determine safe rates of deceleration for men.

(3) With the mining industry – assessing x-ray equipment as a means of determining the condition of hoisting ropes within steel clamps; results to date excellent.

(4) With the mining industry – on improvements to prevent runaway accidents and fires on mobile trackless equipment underground: (a) improved braking systems; (b) improved steering controls; and (c) fire suppression systems.

The Cable Testing laboratory in the Whitney Block completed 1,089 tests in 1974. By statute, all wire rope used in hoisting installations must be tested by the Ontario Government Cable Testing Laboratory before use and at intervals during service. Each cable is tested for strength of material of components including a breaking test up to 600,000 pounds in tension.

MINE RESCUE TRAINING

Seven fully equipped and staffed mine rescue stations, and 14 substations, complete with oxygen-breathing apparatus and supplies for emergency use, are operated in the province. Eleven hundred and eighty-eight mine employees and supervisors are receiving training in the use of five types of breathing apparatus and in the techniques of underground mine fire control, for one full day every two months.

It was necessary to have our 1974 Mine Rescue Handbook re-printed due to the unexpected sale of over 700 copies to other provinces.

Thirty-three mine rescue teams participated in seven district competitions, and the seven winners then competed in the provincial finals. The winners of the seven district events were Campbell Red Lake Gold Mines; Noranda Mines, Geco Division; Algoma Ore Division of Algoma Steel Corporation; Inco Creighton; Falconbridge Fecunis; Willroy-Macassa; and Noranda Mines, Langmuir Division.

The 1975 Provincial Champion was the team representing the Algoma Ore Division of Algoma Steel, captained by Keith Barlow.

MINERAL RESEARCH BRANCH

The Mineral Research Branch maintains laboratories in Toronto and Cobalt to assist in the development and utilization of mineral resources by research studies and supplying scientific and analytical information.

TORONTO LABORATORY

The Toronto laboratory supplied scientific support in the aspects of Mine Division Programs requiring elemental analysis, physical testing and mineralogical work. Our scientists are investigating geological materials taken from drill holes in the James Bay Lowlands as support for the Geological Branch program of study and exploration of that area. A co-operative project, with the Mines Engineering Branch, of monitoring quartz dust in Ontario mines and mills was undertaken. The Mineral Research Branch will set-up specialized equipment, develop methods, and provide analytical support for this project. A repository of Ontario rocks has been started in the Branch. Samples, thin sections, analytical and mineralogical data on thousands of Ontario rocks will be available for study as an aid to mineral exploration. The Branch continued to participate in Canadian and international programs of geological standards analysis.

TEMISKAMING TESTING LABORATORY

The primary functions of the laboratory are the bulk sampling of silver-cobalt ores and concentrates and the determination of silver, cobalt, nickel and copper so that the market value of mine shipments can be established. While silver ores are given priority, the mill is available for the processing of other rock, ores, and concentrates.

DIVISION OF FISH AND WILDLIFE

The Division is comprised of the Commercial Fish and Fur Branch (Resource Products Program), Fish and Wildlife Research Branch, Sport Fisheries Branch and Wildlife Branch (Outdoor Recreation Program). The objective of the Division is to manage the fish and wildlife resources of Ontario so as to provide a continuous supply of recreational and economic opportunities, and to develop public understanding of the relevant ecological principles.

COMMERCIAL FISH AND FUR BRANCH

The objective of the Branch is to manage fish, fur, wild rice and similar resources for commercial purposes.

THE FRESHWATER FISH INDUSTRY

Landings in the commercial fishery remained stable in 1974. Food-fish landings were approximately 53.2 million pounds ($9.7 million) and bait-fish, 7.5 million pounds ($2 million). The industry employed about 5,500 persons. Some of the major activities during the year were as follows.

The Freight Equalization Assistance Program continued to help fishermen in northwestern Ontario meet the high costs of transporting fish from remote areas and encouraged the harvest of under-utilized species.

Assistance was provided in developing domestic markets for smoked and filletted mullet and maria.

Pair-trawling and pair-seining were tested on Lake Nipissing and proved effective for selectively harvesting cisco in certain parts of that lake.

Bait-fish workshops were held in eastern Ontario to assist bait-fishermen in their operations. Experimentation was continued to improve bait-fish holding and harvesting techniques.

An eel-ladder was installed at the Robert H. Saunders Generating Station, and 130,000 eels were passed over the dam into Lake Ontario.

Additional areas of eastern Lake Superior were explored and found suitable for establishing a chub fishery.

Three publications were produced:

Exploratory Trawling in Lake Ontario;

The Commercial Fish Industry; Statistics on landings, 1956-1960; and

Ontario's Lake Erie Fishery: A Social and Economic Profile.

THE WILD FUR INDUSTRY

Fur marketing conditions in 1974-5 varied greatly between species. While demand for beaver, mink and marten dropped considerably, otter, fisher and fox prices held firm at relatively high levels. Lynx pelts reached the highest average value even recorded at $126.57, and muskrat pelts achieved the highest value since 1945.

Total fur harvest was reduced by poor climatic conditions, especially in the northwest. However, throughout the Province, more trappers took part in the harvest than in previous years.

Trapper workshops were redesigned and upgraded to emphasize efficiency and humane trapping techniques. Under this new program, 25 districts reported a total of 344 hours, or 62 days of workshops, to reach approximately 1,800 trappers, novice trappers, and others.

Trap development work was continued with initial tests being performed on several designs, and two designs were selected for more extensive field tests and modifications. In addition, other new designs were directed to the newly-formed Federal-Provincial Committee for Humane Trapping.

The marten and fisher study conducted in Algonquin Region produced preliminary results which were of use in recommending future seasons.

RESOURCE DEVELOPMENT (NATIVE PEOPLE)

The Federal-Provincial Resource Development program has been in effect for several years. The program was instituted to assist native people in various fields relating to renewable natural resources, thus providing improved opportunities for employment in the areas in which they are resident in activities such as lumbering, hunting and fishing.

The following projects were carried out during the fiscal year under the Federal-Provincial Resource Development Agreement.

Fur. Trappers and their families from the James Bay area were assisted in establishing themselves on vacant trapline areas in Northern and North Central Regions to harvest fur in areas not being utilized. Some trappers participated in the trapper education program which promoted the care and handling of pelts, as well as aspects of humane trapping techniques and sound management practices.

Commercial Fish. Lake surveys were conducted to determine the availability of desired fish species which would support a commercial fishery. Also, studies and experiments on netting operations and on handling, packing, and storage of fish were carried out.

Tourism. Indian bands were assisted in the operation of six goose hunting camps located along the coasts of Hudson and James Bays. The aim of this program is to assist native people to become proficient in the field of operation. It is expected that eventually these camps will be taken over completely by the bands.

Hide Collection. Moose and deer hides were collected throughout the province and distributed at tanning costs to Indian bands. The hides are then made up into various forms of Indian craft such as jackets, mukluks, slippers and gloves. These articles are then made available for sale, thus adding to the income of the bands benefitting from the hide collection program. Through proposed advertising, it is expected a remarkable increase will be realized in the future. During the past year, a ticket draw was instituted for various articles of Indian-made apparel to encourage the donation of animal hides. This draw was held at the Ontario Federation of Anglers and Hunters' convention in Ottawa and proved to be most successful.

Timber. Technical advice was provided on logging, lumbering and reforestation projects. Assistance was given to Indian bands in the management of reserve forests and plantation improvements.

Planning. Indians attended meetings and took an active part in planning projects such as lake surveys, park establishments, recreational opportunities, development of sport fisheries in specific areas, and plantation and reforestation programs.

FISH & WILDLIFE RESEARCH BRANCH

The objective of the Branch is to provide the understanding of basic principles related to fish and wildlife resources for their optimum management by undertaking or arranging investigative research.

In pursuit of this objective, the Branch not only carries out relevant, high-quality research and publishes its results in the open scientific literature, but makes its specialized expertise available to all levels of the Ministry to assist policy formulation, program design and the analysis and evaluation of results.

Much of our fisheries research is aimed at improved prediction of the impact of man's growing and varied use of our waters and their fish communities. Insight into the direct and indirect effects of fishing, pollution, the introduction of alien fish, shoreline development, water level changes and other perturbation is sought by comparison studies of the lightly stressed fish stocks of selected northern lakes with those in more heavily stressed southern waters, especially Lakes Ontario, Erie and St. Clair. During the past year the studies of unstressed situations were extended to include a set of small lakes typical of those in the boreal forests north of Lake Superior. This will supplement the valuable and long continued studies on Algonquin Park lakes, as well as Lakes Superior and Huron.

The genetic research and the selective breeding program, intended to produce fish possessing qualities recommending them for stocking in our natural waters, continued to concentrate on the lake trout-brook trout hybrid, the splake. Samples of the survivors of the highly selected, fifth-generation splake stocked into Lake Huron showed this fish, which amounts to an early maturing lake trout, to be growing well and showing reasonably good survival. Field tests of several genetic strains of splake in smaller inland lakes in Northeastern Region showed them to offer some advantages by way of rapid growth when compared to either parent species, and to have enjoyed good survival. Hence, a hybrid strain may provide a useful alternative in stocking depleted inland waters on a quasi put-and-take basis.

In collecting the necessary data to pursue these various studies, our fisheries scientists obtain much information of immediate use to management staff in areas where they work, and have increasingly served as resource persons on local management committees, during the past year. In a similar way, they have become increasingly involved as technical representatives of the Ministry on inter-ministerial and federal-provincial committees as well as those of the International Joint Commission for Boundary Waters and the Great Lakes Fishery Commission.

Wildlife research in Ontario seeks to fill our knowledge gaps by investigation of behaviour, physiology, reproduction, pathology, population dynamics and interactions between wildlife and habitat of selected species.

Progress continued toward optimization of a baiting strategy capable of delivering an oral rabies vaccine to the major wild carnivore vectors of the disease. This program is far in advance of comparable efforts around the world. Black bear studies continued to provide important insight into fluctuation in human: bear problems. A new project has already provided much information on a bear parasite which has caused concern among hunters.

Pathological research also included the analysis of material collected by Dr. Audrey Fyvie before her death, while laying groundwork for experimental studies of the influence of diseases on population dynamics. Continued development of a radio-tracking system bore valuable fruit, but full utilization of this tool is hampered by lack of the automated receiving equipment available through modern technology.

SPORT FISHERIES BRANCH

The objective of the Branch is to maintain and enhance the fish populations of Ontario as a stable base upon which to provide continuing recreational and economic benefits to the people of Ontario.

During recent decades, some of our waters have lost production potential, and some fish populations have lost stability. The general stresses which act on fish populations include excessive exploitation, excessive degradation of water quality by nutrients and/or contaminants, and the side effects of newly introduced or invading species such as smelt or sea lampreys.

Recovery of the former fish production potential of Ontario waters requires a more intensive degree of fisheries management effort throughout the province. This includes continuing international participation in the program of the Great Lakes Fishery Commission, and an increased fisheries role in water-quality management programs co-ordinated by the International Joint Commission.

To promote the optimum management of Ontario's fisheries resources, a joint federal-provincial planning exercise is being conducted to identify the problems facing the fisheries, and possible strategies are being developed to alleviate these problems.

FISH CULTURE

About 250,000 pounds, or 7.1 million fish, and 12 million eggs were stocked in public waters of Ontario during 1974. The Great Lakes rehabilitation program required 22 per cent of the total number, and the balance were released in numerous inland waters. Brook trout and lake trout, and the selected hybrid, splake, accounted for 57 per cent of the total fish stocked.

Planning continued for the proposed Lennox Fish Culture Station in southeastern Ontario, and for the reconstruction of Dorion Fish Culture Station in northwestern Ontario.

Information generated from existing and developing data systems will provide a necessary base for the considerably expanded fish culture program required to meet a growing public demand, and to meet the needs for rehabilitation of depleted stocks of fish in the Great Lakes.

A Ministry agreement with the University of Guelph permitted the continuation of disease diagnostic services and fish nutrition studies. Improved diet formulations were developed and tested with favourable results.

FISHERIES SERVICES

A significant decrease in the sale of three-day, non-resident angling licences was anticipated as, for the first time, the fee was raised to $5.00 to be more than half the price of a seasonal licence at $8.50. The actual decrease amounted to 23.8 per cent. At the same time, sales of seasonal licences increased by 3.8 per cent, and Canadian resident licences increased from 19,108 to 21,807.

This year saw the initial design and development of the Ontario Fisheries Information System. A new data base was initiated for hatchery production and costing data, and development of the creel survey analysis system continued.

POPULATION DYNAMICS

During its first full year of operation, considerable travel and attendance at meetings occurred as the Section provided consulting services to field staff. The Section was involved in the Salmonid Communities in Olizotrophic Lakes training session in northern Ontario and participated in the development of the Ontario Fisheries Information System. A co-ordinating role was provided for Ontario contributors to an International Percid Symposium (PERCIS) to be held in Ontario in the fall of 1976.

Major emphasis continued to be placed on lake trout. A geographical atlas, listing the origin and location of the 2,000 lake trout lakes in Ontario, was completed. Work was continued on a classification system for lake trout lakes. A co-operative project with Fish and Wildlife Research Branch, to compare the common physical and chemical properties of Ontario's lake-trout lakes and non-lake-trout lakes, was initiated.

FISH HABITAT (ENVIRONMENTAL) DYNAMICS

Our waters, or fish habitats, go through seasonal changes which are normal for them and for the fish and other life in them; they are said to be dynamic as opposed to static. Modern man's activities, such as hydro development, road building, agriculture, pulp manufacturing, mining and cottage development add other kinds of changes to fish habitats. The changes imposed are seldom obvious to man in the short term, but it has become clear that fish populations must and do respond to these changes even in the short term.

Considerable loss of fish production potential is attributable to changes in water quality imposed by man's developmental activities.

In the belief, that similar loss can be avoided or minimized in the future by careful planning and engineering, considerable effort is being expended in providing advice and forecasts of potential impact on fish habitats. Studies have been conducted with Ministry of Transportation and Communications on the impact of the Hanlon Expressway on a brook trout stream, and with Ontario Hydro, Stelco, Texaco and Ministry of the Environment on the impact of the Nanticoke development on the adjacent part of Lake Erie, among others. To ensure adequate monitoring of impact, both the Hanlon Expressway and Nanticoke studies have been extended for another one and one-half and three years, respectively.

A pilot study on reclaiming lost fish habitat was conducted on Wilmot Creek. Work included planting streamside vegetation, erecting fences, stabilizing stream banks with gabions and riprap, and forming pools, and undercut banks. Water quality changes and fish populations were monitored. A booklet entitled "Better Streams for More Trout" is in press for public use.

In-stream dams on rivers are still one of the most serious threats to maintaining natural salmonid populations. As part of our program of making streams more accessible to salmonids, a new type of fishway has been further tested in conjunction with Engineering Services Branch. The tests were successful, and this fishway has been accepted as another tool to pass fish over barrier dams.

Monitoring of adult salmonid populations at the fishways on the Saugeen and Ganaraska Rivers continued. Over 2,500 rainbow trout and some brown trout were measured, examined, tagged at these fishways, and given access to their spawning beds upstream. Operation of fishways on the McIntyre, Sydenham and Nottawasaga Rivers also provided access for salmonids to several hundred miles of upstream habitat. A new study of monitoring downstream migrant smolts began this spring at the Ganaraska fishway.

In our continuing, detailed inventory program, some 560 lakes and 58 streams were examined in 1974. Four hundred and eighty-four fishing maps have been prepared for public use.

PLANNING

Planning Section provides fisheries input to Ministry strategic land use plans, municipal plans, and various other types of planning documents prepared within and outside the Ministry of Natural Resources. Participation in the plan review process ensures that fisheries concerns receive adequate consideration.

Work has continued on the calculation of potential fish yields based on watershed units. Data on lake areas and fish productivity of southern Ontario lakes will be available shortly.

The "Trout and Salmon Migratory Routes Map" for northern Ontario has been prepared and is currently at the cartographic stage.

Preparations have begun for a province-wide survey of resident and non-resident anglers. The survey will collect information regarding the amount and location of sport fishing in Ontario, user characteristics, angler preferences, expenditures and limited harvest information. A pilot survey will be conducted in late 1975, and the final comprehensive survey will occur in 1976 to coincide with the national census.

Sport Fisheries Branch serves as the liaison agency within the provincial government in dealings concerning the federal Small Craft Harbours Program.

WILDLIFE BRANCH

The Branch objective is to manage, enhance and interpret wildlife populations and habitats to provide optimum wildlife-based recreation opportunities for the residents of Ontario, and a continuous contribution to tourism and its related industries. Much effort is directed to the maintenance and improvement of wildlife habitat as it is habitat which determines the potential in wildlife numbers.

BIG GAME MANAGEMENT

The 1974 deer hunt was similar to, or better than, 1973 in the Fort Frances, Kenora, Manitoulin Island, North Bay, Bancroft and Pembroke areas, and most of south-eastern and southern Ontario. Less success in hunting was evident in the Dryden, Blind River, Parry Sound, Bracebridge, Minden and Tweed Districts. Very little deer mortality was noted in the winter of 1974-5 although it is not yet known whether productivity was affected. There was considerable snowfall in many areas of the Province's deer range, but fortunately conditions were not severe until mid-winter. Forest cutting practices in most areas of Ontario from Sault Ste. Marie, south to Parry Sound, Tweed and Pembroke, continue to be unfavourable to deer. Deer habitat management is concentrated on increasing the winter food supply by cutting hardwoods in and around winter shelter.

The moose population remains relatively stable. The size of the herd declined in areas which are easily accessible to hunters, but increased in localities away from roads and lakes. Working with local populations of animals is important to implement a sound provincial moose management program. The initial phase of the new program, the establishment of 42 Wildlife Management Units in northern Ontario, is nearly completed.

Black bear numbers, though difficult to assess, are believed to be holding constant. Nuisance bear are trapped and released elsewhere whenever possible, or destroyed if necessary. Hunters take averages between 6,000 to 9,000 bears per year, and the number of bear hunters is increasing.

Timber wolf and coyote populations remained relatively stable during the past year. Occurrences of predation on domestic stock, by coyotes primarily, were comparable to those of 1973. Losses attributed to these species, and for which producers received compensation under the Wolf Damage to Livestock Compensation Act, were in the amount of $71,700.00 for 1,070 sheep, 124 cattle, two horses, six goats, one swine and 74 fowls and other poultry.

The Act was revoked in December, 1974, and its provisions were incorporated into The Dog Licencing and Livestock and Poultry Protection Act under the administration of the Ministry of Agriculture and Food.

During 1974, the predator control program resulted in the removal of 100 wolves and coyotes and 40 black bears from areas in which producers were experiencing livestock losses to these predators.

UPLAND GAME MANAGEMENT

Ruffed grouse reached a low last year and are now recovering. There is a prediction of increased numbers of Hungarian partridge for eastern Ontario. Sharp-tailed grouse populations are also recovering. Numbers of European hare, varying hare, and cottontail rabbits have been more or less stable.

Due to the loss of habitat, wild-bred ring-necked pheasant numbers are declining. Released birds supplement the wild stock on Wildlife Management Areas and in regulated rural municipalities.

Squirrels are generally plentiful, and raccoons are increasing in numbers in most of the Province. Fox populations fluctuate with outbreaks of rabies.

The 1975 woodcock survey count was comparable to last year's count although lower numbers were recorded in certain districts.

WATERFOWL MANAGEMENT

A program to establish a wild-breeding population of the giant Canada goose has been underway since 1968, and wild birds may be seen in many places. Snow geese in the far north reproduced well in 1974, resulting in large numbers in Ontario. The 1975 nesting season was average. The fall populations of ducks of various species were similar to those in earlier years.

WILDLIFE EXTENSION AND PROVINCIAL WILDLIFE AREAS

Thirty-eight areas are located throughout southern Ontario to provide wildlife-based recreation on private and public land. Habitat is managed to produce wildlife for viewing, hunting and maintenance of wildlife populations. Interpretive displays and trails are provided in many of the areas.

FIELD SERVICES

Conservation Officers of this Ministry are responsible for the enforcement of laws and regulations pertaining to fish and wildlife. The laws include The Game and Fish Act, The Endangered Species Act, The Fisheries Act, and The Migratory Birds Convention Act. Convictions for violations recorded in 1974 totalled 5,649, an increase of approximately 25 per cent over 1973.

PLANNING

Many kinds of plans, including recreational, forestry, mining, housing, and municipal development plans, have been reviewed to ensure that wildlife interests are an integral part of planning considerations. Environmental impact assessments from many sectors are increasing in number and have been carefully scrutinized with regard to wildlife interests.

New wildlife management units have been developed for the north, and the boundaries of the zones for the 1975 hunting season are based on these new units.

WILDLIFE SURVEYS AND RECORDS

This office, formerly called the Central Licence Bureau, files hunting and non-resident angling licences. Statistics on participation in hunting, including participation rates, hunter success and harvest, and socio-economic characteristics of participants, are obtained through mailed questionnaires. The information so collected supplements data obtained in the field and forms the basis for wildlife management and recreation planning.

DIVISION OF PARKS

PARK MANAGEMENT BRANCH

The number of campers using Ontario Provincial Parks increased in 1974 to 1,615,677 while the total of visitors declined slightly to 11,031,651, an eight per cent reduction from the 12,136,909 visitors in 1973.

In southern Ontario, many families had to be turned away on busy weekends despite the addition of new campsites to the system. July/August percentage occupancy increased to 62 for the 20,036 campsites available, up from 58 per cent the year before.

Two new parks were opened:

Petroglyphs, a 2,878-acre day-use historical park situated 30 miles northeast of Peterborough, preserving significant Indian rock carvings; and

Halfway Lake, a 3,240-acre recreational park with 118 campsites situated 50 miles north of Sudbury on Highway 144.

The total number of parks increased from 115 to 117. In addition, many existing provincial park facilities were upgraded with improvements to water, sewage and electrical systems.

VISITOR SERVICES – INTERPRETIVE PROGRAM

During the year, more than 900,000 park visitors attended exhibits, conducted trips, self guiding trails, lectures, and organized group recreation activities to learn more about Ontario and its parks, environment, resource management and history.

A waterfowl viewing weekend was held at Long Point Provincial Park in co-operation with naturalist organizations, and over 10,000 visitors attended.

The number of parks offering interpretation programs continued to expand, and several new audio-visual programs were produced.

A detailed study of the interests and desires of campers in Provincial Parks was completed. Over 1,200 personal interviews with campers were conducted in six parks. The results of this study will assist in the formulation of policies and direction for the Visitor Services and Interpretive Program.

WINTER PARKS

During the winter of 1974-5 four parks were operated on a winter basis: Arrowhead, near Huntsville; Sibbald Point, on Lake Simcoe; Pinery, on Lake Huron; and Rondeau, on Lake Erie. Winter facilities include snow-plowed roads and campsites, heated washrooms with hot water, central drinking water, fuelwood supply, garbage disposal, and electrical outlets. Regular fees were charged.

Ski-tows were operated at Pinery and Remi Lake Provincial Parks. Many other parks were used for activities such as snowshoeing, cross-country skiing and tobogganing.

SNOWMOBILE TRAILS

Snowmobiling was permitted in Provincial Parks on approximately 200 miles of marked trails and 700 miles of park roads during the past winter. Over 600 miles of cross-country snowmobile trails were operated on public lands in Parry Sound, Huronia, Lindsay, Tweed and Ottawa Districts.

In addition, a special one-season snowmobile trail maintenance program, funded to $1,000,000, was instituted to assist snowmobile clubs, municipalities and conservation authorities to improve the grooming of over 7,000 miles of trails across the Province. In addition to increased trail grooming equipment and assistance from the Ministry's 49 District Offices, for the first time direct financial aid (in the form of grants) was made available to 132 eligible clubs and agencies.

ACCESS POINTS

During the year, close to 1,000 access points with parking areas and boat launch ramps were maintained to provide boaters with access to lakes and rivers.

CANOE ROUTES

In 1974, more than 100,000 persons entered Algonquin and Quetico Provincial Parks for interior canoe camping.

A booklet, Northern Ontario Canoe Routes, was issued to summarize 125 routes representing 11,000 miles of canoeing waterways.

A program to document canoe waterways in southern Ontario was continued in 1974.

CAMP ALGONQUIN

A special camp for disadvantaged boys and girls aged 12 to 16 years was established at Algonquin Provincial Park in July, 1974. Operating for four two-week periods in July and August, the camp accommodated 175 children. Facilities were installed by the Ministry of Natural Resources and the program was operated by the Camping Division of the Metro-Toronto Y.M.C.A.

ROWDYISM IN PROVINCIAL PARKS

Rowdyism within Provincial Park campgrounds continued to be a problem in the 1974 season despite the hiring of additional security staff and conservation officers, increased staff training in law enforcement techniques, and extra assistance from the Ontario Provincial Police.

The number of persons evicted increased from 4,282 to 5,542 and the number of persons charged under the Provincial Parks Act and other statutes rose from 967 to 1,824. The value of visitor property stolen increased from $22,538 to $50,602 and damage to parks property from $15,400 to 22,008.

To control the problem during 1974, law enforcement training was intensified and new regulations were introduced.

PARK PLANNING BRANCH

RECREATIONAL LAND ACQUISITIONS

Work continued on the evaluation of future parkland with emphasis on increased recreational facilities for southern Ontario residents. During the year, 11,620 acres were acquired for parks purposes.

As part of the implementation of the Niagara Escarpment Report, 8,434 acres were purchased, making a total of 40,442 acres acquired to date. An additional 80 acres of land were purchased at Wasaga Beach.

PARK ADVISORY COMMITTEES

In May, 1974, an Advisory Committee was appointed to study Rondeau Provincial Park.

Policy recommendations by the Shorthills Provincial Park Advisory Committee were accepted in the main by the Minister in August, 1974.

PROVINCIAL PARKS COUNCIL

The Ontario Provincial Parks Council, under the chairmanship of Dr. George Priddle, University of Waterloo, was appointed in October, 1974. Comprising 19 members representing a wide array of recreational backgrounds, the Council's mandate includes monitoring the implementation of the Algonquin Park Master Plan and advising the Minister with respect to the planning, management and development of the Provincial Parks system in relation to changing public needs.

MASTER PLANNING

The Provincial Park Master Planning program continued to expand this year with the completion and publication of Master Plans for Algonquin Park, Mono Cliffs, Ouimet Canyon, Wasaga Beach and Duclos Point.

Work continued on finalizing plans for Frontenac, Petroglyphs, MacGregor Point, Quetico, Polar Bear, Short Hills, Boyne Valley, Sibley, Methodist Point, Bon Echo, Silent Lake, and 25 other park projects.

Public discussions were held on these plans to permit active public involvement in the planning of future policies and developments.

Pistol Lake. A consultant was engaged to prepare a draft Master Plan for a new Provincial Park situated about 36 miles north of Kenora on the west shores of Pistol and Sand Lakes. Alternative development strategies for the 4,000-acre park reserve will be presented for public discussion.

NEW PROJECTS

North Shore Lake Superior Recreation Study. Initiated in 1974, this planning study on the potential of the north shore of Lake Superior for water-oriented recreational activities was released in February, 1975, for public discussion.

PARK CLASSIFICATION

Work was initiated on revisions to the park classification system in use since 1967. The proposed revisions introduce certain new class designations and will provide more detailed policies for the planning, development and management of existing and future provincial parks.

PARK USER SURVEY

A park user survey program was commenced during the 1974 season to survey users of provincial parks on a regular basis. The purpose of the program is to provide information vital to the planning and management of the parks. Designated parks will be surveyed on a cyclical basis, once in five years, each year of the cycle involving a different group of parks.

TOURISM BENEFITS STUDY

A study was undertaken to examine and further clarify one of the Division's objectives – provision of a continuous contribution to the economy of Ontario from tourism and its related industries. Under the study, this objective was further defined, methods for assessing economic impact of parks were reviewed, and a proposed procedure for evaluating economic impact of Ontario Provincial Parks was developed. Results of the study have been documented in a report.

WILDERNESS AREAS

Investigations were undertaken to define the elements of a system of wilderness areas for the Province and to identify and delineate candidate areas.

TRAILS INVENTORY

In conjunction with the Winter Trails Maintenance program initiated this year, an inventory of existing trails was undertaken to provide information for trails planning purposes.

NATURE RESERVES

A new planning/measurement system for nature reserves is under development to facilitate the identification of potential nature reserves and the evaluation of existing reserves.

HISTORICAL SITES BRANCH

SYSTEMS PLANNING

The Topical Organization of Ontario History, the Research Report Format, and the Historical Resources Evaluation Scheme, planning tools developed over the past two years, were extensively used in the past year's research program. The *Topical Organization of Ontario History* was published and distributed to Ministry of Natural Resources regional offices and across Canada.

INVENTORY

The Branch's historical resource inventory continued to expand and was effectively used as the Branch provided resource information and planning advice to other ministries for more than 15 projects, these projects included highway and hydro corridors, new towns, and land-use planning and lakeshore development exercises.

RESEARCH AND PLANNING

The program of research and planning continued in parks, park reserves, public land areas and areas critical to recreation planning. During the year, 14 surveys, inventories, or other studies were continued and 30 new projects were initiated. The total of 44 projects was comprised of 29 archaeology, 12 history, and three architectural history studies.

RESEARCH PUBLICATIONS

The Research Report series was continued with the publication of *North Pickering Archaeology* (number 4), *Annual Review: Research* 1973-74 (number 5), and *Canadian Archaeological Association, Collected Papers – March, 1975* (number 6).

HISTORICAL PARKS

Fort William Historical Park, Thunder Bay, opened 13 of the projected 48 structures to the public. Visits increased by more than 60 per cent from 1973 to total 71,398.

Sainte-Marie among the Hurons, Midland, had 143,224 visitors, an increase of more than 1,000 over the 1973-4 season. The millionth visitor, Mr. John Gagnon, and his family were welcomed to the site in the summer of 1974. The 1972 Sainte-Marie Prize in History was presented to Professor Francois Gagnon of the University of Montreal for his work "La Conversion par L'Image". The presentation was made at Sainte-Marie by Lorne Maeck, parliamentary assistant to the Minister. Also, the 1973 Prize was presented by Dr. J. K. Reynolds, Deputy Minister of Natural Resources, to Professor Cornelius Jaenen of the University of Ottawa for his manuscript "Friend and Foe: Aspects of French-Amerindian Contact in the 16th and 17th Centuries".

The Historic Naval and Military Establishments, Penetanguishene, saw continued research and program planning in 1974. During the year 11,112 persons visited the site.

The Museum of the Upper Lakes, Wasaga Beach, had 12,645 visitors in the 1974-5 season.

DIVISION OF LANDS

LANDS ADMINISTRATION BRANCH

The Branch is responsible for formulating objectives with respect to the administration of Crown lands (both public and mining lands) in Ontario, and for acquiring private lands necessary for Ministry programs.

LAND ACQUISITION SECTION

The Section purchases all private properties required for programs of the Ministry such as public recreation and timber management. It assists in setting acquisition priorities, oversees and approves each purchase and maintains a computerized inventory of all property acquired. Newly acquired properties are managed by the Section to provide optimum benefits until they are incorporated into Ministry programs. More than 600,000 acres have been purchased since the Section's formation in 1962 – 5,200 acres in the past year. This year particular emphasis was placed on consolidating holdings to allow development of the properties to begin.

TITLES SECTION

This Section prepares the title documents required to dispose of Crown lands under The Public Lands Act and The Mining Act and maintains a written registry of Crown lands. In addition, it levies mining acreage tax and carries out procedures necessary to effect forfeiture to the Crown of

alienated mining lands when the owners default. In 1974-5 there was an increase of approximately 36 per cent over the previous year's total in the number of title documents prepared. The number of patents and leases prepared for summer resort lands increased by almost 15 per cent.

MINING LANDS SECTION

Under The Mining Act, this Section is authorized to manage Crown mining lands as follows:

(i) ruling on leases and exploratory licences of occupation (used often in oil exploration);
(ii) issuing permits for sand and gravel removal;
(iii) collecting royalties;
(iv) auditing all mining claims recorded in regional offices; and
(v) freezing land from dispostion for mining where necessary.

Protection and rehabilitation of land figure prominently in the work of this Section. It licenses the commercial removal of sand and/or gravel from all beaches, banks or waters of lakes and streams and regularly monitors such operations. This surveillance, and consultation with Fish and Wildlife field office staff and with the federal Ministry of Transport, ensure that erosion or significant damage to the local ecology is prevented. Only municipalities removing sand and/or gravel for their own use are exempt from Ministry licensing and supervision. The program of rehabilitating depleted pits and quarries continued with approximately 51 being restored from a budget of $100,000 in 1974-5.

PUBLIC LANDS SECTION

In the administration of public lands other than mining lands, the emphasis has changed from strictly land disposition to management. Management focuses on developing a balance between preserving unique or traditional land attractions, maintaining an allowance for future flexibility, and meeting public needs for lands and waters.

Public land is disposed of by sale, lease, easement, licence of occupation, land use permit, or by vesting order when transferred to another agency of government. This Section prescribes conditions for disposition of public land in accordance with land-use plans for the area concerned.

Privately owned land is managed only in territory that is not municipally organized, through the designation of Restricted Areas under Section 17 of The Public Lands Act. Only one area was given restricted status during 1974-5. The Ministry is presently reviewing its position on restricted areas with the aim of improving its service to the public.

Crown Cottage Lots: Proposals for Change. In the case of cottage lots for private use, regulations were altered in 1971 to allow tenure by lease only. This past year two additional regulation changes were proposed. The first affects eligibility for cottage lots, and the second introduces a new type and location of lot. At present, during the first year on the market, cottage lots may be leased only to Canadians and landed immigrants. However, under the proposed regulation only Canadian citizens and landed immigrants who are Ontario residents may acquire leases in the first year of registration; other Canadian citizens and landed immigrants will be eligible during the second year; and non-Canadians thereafter.

The second regulation change under study will allow the introduction of a remote cottage site program as an alternative to cottage lots in subdivisions. Isolated sites suitable for cottages, with 'backhouse and waterpail' facilities only, will be located north of the French and Mattawa Rivers in northern Ontario. Both shoreline and inland sites will be widely spaced; the inland sites, more than one-quarter mile from waterways, will be restricted to one in each nine square miles. Lease conditions will apply as with subdivision cottage sites but tenure arrangements will be of shorter duration.

Crown Land Camping. An innovative program of Crown land camping was initiated this year on a trial basis. Prepared campsites, supervised by Ministry staff, but without water or electricity, were provided within one-quarter mile of roads near Kenora. A nominal fee only was charged for this 'near-wilderness' camping. Although final results of the experiment are not yet available, all early indications point to its success.

LAND USE CO-ORDINATION BRANCH

During 1974 the Branch, comprising the *Land Use Planning, Land Use Liaison* and *Municipal Plan Review* Sections, continued to co-ordinate Ministry planning, assist other ministries and municipalities with land-use plans, and review development proposals that came from individuals and outside agencies.

STRATEGIC LAND USE PLAN

Since its inception in 1972 the Branch has placed a major concentration of effort on the preparation of the Strategic Land Use Plan. When completed and approved, this will serve as the official co-ordinating guide for all programs of the Ministry that require land. Aiming at the same goal of a comprehensive, co-ordinated policy, the Land Use Liaison Section held a series of meetings with other branches of Natural Resources and with other ministries to discuss a variety of land use policies. Both main office and field staff participated in collecting and analysing data necessary to the formulation of policy.

The outcome of this activity was the creation of policy statements for the Northwestern, Northeastern and Southern Planning Areas. Information packages describing these policies and inviting public reaction were produced, though only the Northwestern planning package was released to the public before year's end. Some comment has already been received and considerably more is expected. All comment will be taken into account in the finalization of the policy, scheduled for next year. Another in-house product was a first draft of the General Land Use Plan for Lake of the Woods.

ASSISTANCE TO OTHER JURISDICTIONS

The Branch worked closely with the Ministry of Transportation and Communications on regional network plans; with Treasury, Economics and Inter-governmental Affairs on its parkway belt and regional development projects; and with Ontario Hydro. It also maintained close co-operation both with Environment, Industry and Tourism, and Agriculture and Food.

On other governmental levels, planning assistance was given to such projects as the Central Waterfront Plan under the auspices of Metropolitan Toronto and to several municipalities preparing official plans, among them the Regional Municipalities of Waterloo and Haldimand-Norfolk, the District Municipality of Muskoka, and the City of Timmins.

LAKE PLANNING

One highlight of the year's activities came into being when the Land Use Planning Section became involved with lake planning (a function assumed from the Lands Administration Branch) and developed a methodology tested in the field during the summer. The resultant guide was a forerunner of the Lake Planning Manual now in draft form. The manual is considered unique in its field because it provides

a multidisciplined look at a lake and its surroundings as a single ecological entity rather than the usual microscopic view of one segment such as cottaging or fish production. The manual will be available as a guide to cottage associations and as a training handbook for field workers on how to evaluate a lake and produce development for the lake which has an environmental conscience. Already the draft has been sent, on request, to various municipal and provincial governments, federal authorities, other Ontario ministries and planning commissions and consultants in both Canada and the United States.

PLAN REVIEW ACTIVITY

A great many development proposals that came from individuals, private concerns, other government agencies and municipalities can have a significant effect on the objectives and programs of this Ministry. It is important to ensure that these proposals are compatible with accepted land use planning principles and that they create no serious adverse impact on objectives or programs of this Ministry. While the review of these proposals is common throughout Ontario, development pressures are most vigourous in the southern regions. In reviewing and commenting on these development proposals, the Ministry makes a valuable contribution to maintaining a good quality environment as well as trying to ensure that provincial resources remain productive.

The number of subdivision, severance, other specific development and official plan proposals reviewed in the 1974-5 fiscal year has approximately doubled the number reviewed the previous year.

SURVEYS AND MAPPING BRANCH

The Branch is a service agency whose name accurately describes its duties. It carries out ground and aerial surveys of various types and makes a wide variety of maps for the Ministry, the Government and the public at large. Its director is the Surveyor General of Ontario.

The surveys conducted are of two types: those needed locate land boundaries or to define ground position for official purposes, and those needed to record the nature of land and assess its future potential.

The Cadastral Surveys Section is responsible for all surveys or re-surveys of township boundaries throughout the Province and all surveys of Crown land prior to its disposition. Much of this work is performed under the direction of the Surveyor General by land surveyors in private practice.

The Control Surveys Section handles the precise fixing of selected ground points needed for mapping control and to support co-ordinate systems associated with surveying, engineering and geographical referencing. The Section let a contract during the year for a computer program that will be used in adjusting large networks of survey control. It will generally be available for use outside the Section. A data bank for the management of control survey information was also put under development in 1974-5.

The Inventory Section uses photo interpretation techniques to furnish data on forest stands throughout Ontario. It sends out field parties to investigate soils and terrain and to evaluate the potential use of land and water for recreation, timber production, wildlife habitat and any hazards to human occupation. The Section anticipating demands for rapid increases in pulp and paper production, began to accelerate its forest inventory program whose completion target is now two years ahead of the original schedule. It also installed and began to evaluate new water inventory equipment, in co-operation with Sport Fisheries Branch, with the aim of improving fish productivity within the Province.

The Cartographic Section produces the Province's topographic, territorial and geological maps, as well as other thematic maps and associated booklets and brochures. Associated with the Branch's major functions are such supporting activities as the supply and interpretation of satellite imagery and drafting services, the monitoring of geographical names, and the organization of systems for referencing government records by position.

The Drafting Services Section provides general drafting and graphics support to this and other ministries lacking their own drafting staffs. In particular, it maintains plans recording in visual form the status of all mining and other public lands.

The Ontario Centre for Remote Sensing provides a Provincial centre of co-ordination, expertise and research in its field which is largely associated with the interpretation of satellite imagery. The Centre, which became operational only this year, announced the development of a unique capability in aerial photography using miniature cameras which delivers benefits in both flexibility and economy.

The Ontario Geographic Names Board is furnished with its Secretariat and support staff by Surveys and Mapping Branch. This agency provides and maintains accurate, official names for geographical features and unincorporated places for use on Federal and Provincial maps of Ontario and in related documents. As a major field study this year, the Board sent two Cree linguists into the field to collect and verify geographical feature names for use on 30 government-produced topographic maps in the James Bay area. More than 500 names, the majority in Cree, and considerable origin data were collected. This was a significant step towards the better utilization of local Indian nomenclature on maps.

The Task Force on Geographical Referencing, set up by the Branch, published two reports recommending major mapping initiatives for the Province. The reports contain the first comprehensive inventory and appraisal of the Ministry's mapping activity ever undertaken, as well as a review of mapping in other ministries and municipalities throughout Ontario. The Task Force recommended:

(i) a single projection and grid system for the Province;
(ii) standardized mapping scales and formats; and
(iii) a proper evaluation of automated mapping systems.

The Cartographic Section and the Geographical Referencing Section, in cooperation with the Federal Energy, Mines and Resources Department and the Waterloo Research Institute, have now begun this evaluation.

FIELD SERVICES DIVISION

FOREST FIRE CONTROL BRANCH

The 1974 fire season in Ontario was the worst since 1961. A total of 1,625 forest fires burned 1,294,800 acres, the highest acreage since 1923. Of these fires, two occurred at times other than during the fire season, and 71 occurred in areas not under intensive protection; these fires accounted for 1,013,440.4 acres or 79 per cent of the total acreage.

Fire occurrences throughout the beginning of the 1974 season, through to the fourth week in June, compared favourably with the ten-year average. During that time, a total of 533 fires had burned 4,000 acres. On June 26, after three weeks of abnormally dry weather, multiple fire starts

were experienced. During the next week, 196 new fires were reported, 47 of which were reported on one day, June 30.

With the weather offering little or no assistance, the peak occurred on July 28 with a total of 115 forest fires burning in the Province, of which only 56 were classed as under control. The largest fire was Red lake No. 78 which grew to 302,848 acres and at one point threatened to completely destroy the community of Poplar Hills. Residents were asked to evacuate the village temporarily.

For the same period in 1973, a total of 961 fires consumed 8,500 acres.

Lightning accounted for 34 per cent of 1974 fires and 98 per cent of the area burned.

During the 1974 fire season, due to the seriousness of the fire situation, a large number of support aircraft were leased from outside agencies. This was the first time that many of these aircraft had made an appearance in Ontario other than for demonstration purposes. Their use, especially the large retardant bombers such as the A-26 and DC-6B, and the retardant/water bombing capabilities of the Canso and CL-215, proved effective in bringing fires under control. Water bombing with helicopters was given its first extensive trial in Ontario, and the results were encouraging.

FIRE PREVENTION

During 1974, a major accomplishment in the area of fire prevention was the production of a Fire Prevention Manual. This publication is a catalogue of all prevention material from slide tapes to road signs to posters that are available for use in Ontario. Also included is a list of the various media available, and instructions on format and procedure for plugging messages into the system.

Ten 30-second television shorts, produced in 1973 through Information Branch, were released and, from all indications, well received. Current developments included a re-styling of Ontario's prevention posters to conform with the international system and the production of a slide tape program styled after "Only You" which was produced in the United States.

TRAINING

Due to the manpower commitments and other problems created in 1974 by the heavy fire load, basic courses in fire suppression were not conducted. The fifth annual, advanced fire management course (Fire Suppression II) was presented to 23 candidates in February, 1974.

A one-week course in basic fire weather was held with the co-operation of the Atmospheric Environment Service. A total of 28 people completed the course this year.

The air attack training course, originally developed for pilots only, was expanded this year to include other fire control personnel. Training included airtanker loading systems and birddogging techniques, as well as emphasizing the importance of air traffic control over fires.

Future training developments include the purchase of Fire Games for each of the fire regions, and a slide tape program covering retardant aircraft loading.

DEVELOPMENT WORK

Field evaluations of various items of forest fire control equipment were made during the 1974 fire season. Recommendations were made upon completion of tests done during 1973. These included: field test of synthetic fire hose, operational evaluation of the Gorman-Rupp pump, modification of fire hose packaging methods, evaluation of a lightning storm tracking system, and evaluation of computer-assisted data collection techniques.

AIR SERVICE BRANCH

The year 1974 was the 50th anniversary of the Ontario Provincial Air Service. The OPAS was formed in 1924 with the appointment of W. Roy Maxwell as director and the purchase of 13 HS2L flying boats. In that first year, 2,597 hours were flown.

The major changes to the fleet were the addition of 16 DeHavilland Moth seaplanes beginning in 1927; Vickers Vedette amphibians, 1929; four Hamilton seaplanes, 1930; four Fairchild seaplanes, 1930; four Buhls, 1935; nine Stinson gull wings, 1937; and 15 Norsemen seaplanes, 1944-52.

The purchase of the first Beaver aircraft in 1948 was the beginning of a new efficiency in flying operations. The Beaver and the larger model, the Otter, were designed and built to meet Ministry requirements. The success of these aircraft in Ontario led to their world-wide acceptance.

In spite of difficult flying conditions, only 26 aircraft have been written off in 50 years. The last of 25 flying fatalities occurred in May, 1968.

In recent years, aircraft have been lost in service at Geraldton in 1950, at Temagami in 1951, at Dryden in 1952, at Lauzon Lake in 1953, at Ear Falls in 1959, and at Kenora in 1961.

In 1965 an aircraft modernization program was initiated with the purchase of six new Turbo Beavers. A total of 28 were acquired to replace the standard Beavers. Three Twin Otters, one Model 60 Beechcraft Duke and one King Air were also acquired. Six CS2F Grumman Tracker aircraft were purchased and converted for chemical fire bombing.

In 50 years, 1924-74, pilots with the Ontario Provincial Air Service flew a total of 533,652 hours.

During the past year, Ministry aircraft flew a total of 15,455 hours and delivered loads that weighed a total of 12,686 tons.

Nineteen mercy and emergency flights were made to rescue ill and injured persons from isolated locations. These flights accounted for 41 flying hours.

The Ministry fleet of 43 aircraft operated out of 19 bases of which 11 are open the year round.

ENGINEERING SERVICES BRANCH

The Engineering Services Branch supplied support in those aspects of Ministry programs requiring professional engineering, engineering technology and construction expertise.

Projects undertaken included reports, pre-engineering, design, construction and maintenance of dams, docks, navigation locks and other hydraulic structures and facilities as well as improvements to flow channels and dredging.

PRE-ENGINEERING & DESIGN

Projects included dams at Sturgeon Lake, Lyell Lake, Westport, Trout Lake, Longbow Lake, Net Creek, Gin Creek, Paugh Lake and Mud Lake. Other projects included floating docks for Thunder Bay and Geraldton Air Bases; an experimental fish pass at Denny's Dam; studies for bridges at Champlain, Algonquin, Bon Echo and Ouimet Canyon Provincial Parks and for control of shore erosion at Darlington Provincial Park.

Studies undertaken by consulting engineering firms, under the direction of the Branch, included water supply improvement for the Chatsworth Trout Rearing Station, feasibility of a boat transfer facility on the Rainy River at Fort Frances, and a condition appraisal of privately owned dams in northwestern Ontario.

CONSTRUCTION

Staff completed the construction or reconstruction of water control structures at Lyell Lake, Boundary Marsh, Pine River, Longbow Lake, South River, Graham Lake, Clearwater West lake, Loxton lake, Hinsburger lake, Twenty-Seven Lake, Net Creek and Trout Lake.

Aretaining wall was built at Thunder Bay Air Service Base. The fish pass on the McIntyre River at Lakehead University was modified, and a further test installation for an experimental fish pass was made at Denny's Dam on the Saugeen River.

Construction of groins for bank protection along the Moose River at Moosonee was continued for the Ministry of Treasury, Economics and Intergovernmental Affairs: and Bennett Lake Dam was constructed for the Mississippi Valley Conservation Authority.

MAINTENANCE

Maintenance of hydraulic structures, docks and other works was scheduled on the basis of condition determined from inspection and reports submitted from districts. Routine maintenance was carried out on locks at Huntsville and Port Carling; water main repairs were made at Deer Lake Hatchery; and improvements were made to erosion control works at Fox Estate and to the Midhurst Pond. In addition, two fire towers were removed, in Strong Township and at Parry Sound; and the old theatre at Mattachewan was demolished. Maintenance work was carried out on 48 dams and nine docks.

IMPROVEMENTS TO FLOW CHANNELS

Improvements to flow channels by clearing debris and dredging by widening and deepening of flow channels is carried out to increase the efficiency in discharging water from Ministry owned dams, to improve flow between controlled waters, or to decrease downstream flooding resulting from the Ministry's operation of a dam. under this program, floatwood was removed from the Ombabika River Dam.

WATER RESOURCES ENGINEERING

Responsibility for the management of water resources is undertaken through administration of The Lake and Rivers Improvement Act. Thirty-eight approvals of sites and plans for dam construction under the Act were granted. Nine investigations were made of water regulation problems, of which eight were concerning construction or operation of private dams, and one was concerning a stream diversion.

ACCESS ROADS

A total of 4,562 miles of forest access, logging access and Ministry service roads were maintained.

Under Part II of The Public Lands Act, 40 roads comprising 626 miles are designated as public forest roads for the purpose of exercising control by Ministry personnel.

Four hundred and thirteen miles of private forest roads, constructed by industry, are presently under agreement for recreation and travel by the general public. It is expected that this mileage will be increased by 81 miles in 1975-6.

FLEET AND MECHANICAL EQUIPMENT

The Ministry vehicle fleet has been increased during the past year by some 52 units, raising the fixed complement to 1,552 units. The tractor and all-terrain vehicle complement was increased by 44 units to a total of 262. The largest increase was 204 boat and equipment trailers, bringing the complement to 754. Snowmobiles increased by 60 units, bringing the present total to 512. A refrigerated semi-trailer van was acquired for storage and transportation of tree planting stock. The passenger-bus complement remains at 17.

Expansion of the timber program and the snowmobile trail-grooming program, in addition to the normal increase, accounts for this rapid increase in one year. Ministry work programs, which have been in high gear, have increased the operating fleet to 1,786 units. The additional 234 units over the regular complement consists of replacement vehicles, and the vehicles which have been replaced will be disposed of during 1975.

The Fleet Management program, implemented in 1969 in the area north of the French and Mattawa Rivers, has proven to be a valuable management tool for analysis of costs and other variables. Consideration is being given to extending the system to include the remainder of the province and completing re-design of the program by April, 1976, to make it even more useful.

Reorganization of the Visual Identity Manual, covering Ministry vehicles and mechanical equipment, was completed, and the manual was released for distribution. The coloured illustrations and markings contained in it set out the colour combinations for tractors and related types of equipment, all-terrain vehicles and boats, in addition to vehicles.

GREAT LAKES SHORELINE

The extension service program, maintained by the Branch as one of the provincial assistance programs available to shoreline property owners on the Great Lakes, was continued through the year. Under this program, engineers are made available on request to inspect shore properties along the Great Lakes and suggest to the owners methods by which they may undertake to protect their properties against flooding and erosion. The demand for extension service under this program decreased considerably from the demand in 1973.

Ontario also entered into an agreement with the Government of Canada to undertake a joint survey to determine the nature and extent of shore damages, and to make preliminary recommendations aimed at more effective shore management. The final products of this survey will be a Technical Report and a Coastal Zone Atlas.

CONSERVATION AUTHORITIES BRANCH

Conservation Authorities Branch differs from other branches of the Ministry in that the programs it supports are carried out by autonomous, corporate bodies established as Conservation Authorities under The Conservation Authorities Act.

The 38 Conservation Authorities cover most of southern Ontario and areas around Thunder Bay, Sault Ste. Marie, Timmins, Sudbury and North Bay. Each Conservation Authority provides for, and requires, local initiative, involvement and participation in conservation works – a system which assures that local interest and priorities will be recognized.

Conservation Authorities are established through resolutions from one or more municipal councils petitioning the Minister of Natural Resources to call a meeting for that purpose. If agreed upon, the Conservation Authority is established by Order-in-Council. The boundaries of a Conservation Authority are determined by the Minister on a watershed basis, and its membership consists of representa-

tives, frequently council members, of all municipalities wholly or partially within the watershed.

Conservation Authorities have placed special emphasis on water control, but they may undertake almost any project related to the conservation of renewable natural resources. In recent years, increasing attention has been given to outdoor recreation, outdoor education, forest management, fish and wildlife management, and land use. Funds may be raised by making levies on member municipalities and by receiving grants from the Province.

Eleven Conservation Authorities employ resource managers to supervise their programs under the direction of the chairman, and nine share the services of resource managers with other Conservation Authorities. The remaining eighteen are supplied with resource managers by the Province. Technical staff and work force are hired by the Conservation Authorities.

Conservation Authorities relate to the ministry's field organization at the regional level. They are under the control of the Ministry only insofar as the regulations they make must have Cabinet or ministerial approval, and projects receiving grants must have ministerial approval.

The objective of Conservation Authorities Branch is to provide services and recommend policies that will promote the effectiveness of Conservation Authorities and harmonize their programs with those of the Ministry.

GRANTS TO AUTHORITIES, 1974-5

Including Supplementary under The Conservation Authorities Act

Ausable-Bayfield C.A.	$ 308,575.38
Cataraqui Region C.A.	284,135.61
Catfish Creek C.A.	36,944.97
Central Lake Ontario C.A.	924,480.96
Credit Valley C.A.	1,085,989.96
Crowe Valley C.A.	110,031.65
Essex Region C.A.	188,597.98
Ganaraska Region C.A.	75,737.70
Grand River C.A.	6,795,489.53
Halton Region C.A.	1,439,776.76
Hamilton Region C.A.	1,319,277.89
Nickel District C.A.	234,010.97
Kettle Creek C.A.	113,343.57
Lakehead Region C.A.	295,098.10
Long Point Region C.A.	167,492.14
Lower Thames Valley C.A.	409,811.53
Lower Trent Region C.A.	124,004.75
Maitland Valley C.A.	143,059.02
Mattagami Valley C.A.	253,581.13
Metropolitan Toronto & Region C.A.	7,121,230.01
Mississippi Valley C.A.	335,613.25
Moira River C.A.	540,816.24
Napanee Region C.A.	484,817.73
Niagara Peninsula C.A.	493,786.80
North Bay-Mattawa C.A.	95,535.00
North Grey Region C.A.	698,374.43
Nottawasaga Valley C.A.	312,278.24
Otonabee Region C.A.	217,873.90
Prince Edward Region C.A.	135,795.68
Raisin Region C.A.	92,960.52
Rideau Valley C.A.	185,520.48
Sauble Valley C.A.	82,655.46
Saugeen Valley C.A.	361,301.49
Sault Ste. Marie Region C.A.	1,145,191.12
South Lake Simcoe C.A.	495,246.16
South Nation River C.A.	67,460.85
St. Clair Region C.A.	373,457.19
Upper Thames River C.A.	724,869.06
Total	28,276,126.21

Grants to Municipalities under The Parks Assistance Act	$ 325,588.00
Grants to Conservation Authorities under SWEEP	$ 2,014,176.00

BRANCH ADMINISTRATION COSTS

Field Services	$ 583,500.00
Engineering and Technical Services	399,009.00
General Administration	274,550.00
Field Surveys	127,494.00
Junior Conservation Program	51,038.00
Total	1,435,591.00

FINANCE AND ADMINISTRATION DIVISION

LEGAL SERVICES BRANCH

During the fiscal year year commencing with April 1, 1974, and ending with March 31, 1975, amendments were effected to two Statutes administered by this Ministry, and one new Statute was enacted. Amendments were made to The Forest Fires Prevention Act (by Statutes of Ontario 1974, chapter 22); and to the Mining Tax Act, 1972 (by Statutes of Ontario 1974, chapter 132). The Algonquin Forestry Authority Act, 1974 was enacted (by Statutes of Ontario 1974, chapter 99).

Seventy-eight regulations made under the authority of acts administered by the Ministry and 462 orders-in-Council were prepared and processed through the Branch during the fiscal year.

One Federal-Provincial co-operative agreement relating to the Canada-Ontario Rideau-Trent-Severn (CORTS) study and the establishment of a CORTS Advisory Committee and a CORTS Agreement Board was processed through the Branch.

NORTHERN AFFAIRS BRANCH

The Branch is a supporting service for all government agencies doing business in northern Ontario. It has a small co-ordinating office in Toronto and three regional and 24 "storefront" offices in the north. Small communities are served by 50 satellite offices manned on a volunteer basis by employees of other government agencies.

Northern Affairs offices provide information and aid citizens with problems related to all levels of government. They are active as a "government bookstore," carrying pamphlets and forms for many programs and distributing approximately 10,000 publications per month.

North Affairs Officers provide services and facilities and perform specific functions for other agencies. They hold letters of authority under several Acts administered by other ministries, and in many cases they operate across ministerial lines.

Transactions handled in 1971	58,492
1972	80,958
1973	132,975
1974	164,851

INFORMATION BRANCH

The Branch worked through various media during the past fiscal year to disseminate information on the protection

and management of the natural resources under the Ministry's administration.

Information services in Regions and Districts were coordinated more closely with Branch services during the year.

INFORMATION SERVICES

The Branch prepared and managed Ministry exhibits at seven major shows during the year. Small exhibits were supplied on request for schools, libraries and communities. Display material was supplied to Districts which were responsible for Ministry exhibits at 70 annual shows and various one-time events.

Documentary material was prepared and supplied to TV stations. Arrangements were made for professional staff to appear on numerous talk shows.

Outdoors Ontario, a radio series, was supplied to 47 stations and supplemented with *Touch Wood,* a semi-annual selection of announcements. Special material was prepared on request.

Illustrated lectures were given to schools, youth groups, service clubs and outdoor associations.

The Film Library made 1,863 film loans to field offices from its total of 323 titles. The Photograph Library supplied prints and slides on request. Staff photographers completed the photography requested by main and field offices.

Information was mailed to 42,500 persons who requested material on fish, wildlife, parks, forest trees, minerals, Crown lands and waters, or outdoor recreation.

The Ministry's weekly newsletter was mailed to 3,100 news outlets and special-interest groups, and the French translation went to 180 outlets. Urgent news was delivered directly to major outlets. Additional material was supplied on request to editors and broadcasters.

The year's publications included the standard annuals and numerous technical papers and reports. A total of 11 booklets, six folders and six leaflets were reprinted to meet the public demand. New Ministry releases included the following:

Who We Are – What We Are Doing For You (A folder explaining Ministry services to public)
Resources for Education Outdoors (Prepared in conjunction with Ministry of Education for Boards of Education)
The Firebirds (A history of the Ministry's air service, 1924-74) ($6.95)
South Lakr Simcoe Conservation Report
Quaternary Geology of the Woodstock Area ($1.50)
Geology of Pontiac and Ossian Townships $1.25)
Renewing the Forest (folder)
Woodlot Improvement (major revision)
Normal Yield Tables (metric)
Herbicides for Use in Forest Tree Planting (A guide for the private landowner)
Exploratory Trawling in Lake Ontario
Ontario's Lake Erie Commercial Fishery
Toronto Angling Areas (leaflet)
Shrubs for Wildlife (leaflet)
Backyard Habitat (Reprint from 'Ontario Naturalist' of material prepared by Ministry staff)
The Rideau-Trent-Severn, and The Quinte-Kingston Area (Two CORTS reports, each $3.00)

SAFETY PROGRAMME DEVELOPMENT SECTION

Vehicle drivers on staff were trained and tested throughout the year, and the Ministry's certificate for vehicle drivers was issued to qualified drivers in main and field offices.

A total of 20,840 new hunters was trained in safe firearm handling, hunting regulations, bush survival, cold water survival, and hunter-farmer relationships. The training was given by 1,046 instructors certified by the Ministry.

Supervisors were trained in methods of safety instruction, and foremen were given a course in job instruction.

Fire crews were given a one-day course in safe working practices during their fire suppression training.

Courses on the safe handling of boats were given to employees who use boats in their work. Selected employees were trained in the safe operation of snowmobiles and chain saws. Conservation Officers were instructed in the safe handling of side arms and sporting weapons.

First-aid training was given on a regular basis to staff. It included St. John Ambulance methods, Red Cross methods and the use of resuscitators. General instruction included the Lateiner method of accident control and the maintenance of fire extinquishers.

Parks and work camps were inspected for safety and sanitation. Beach patrols were given rigorous tests in lifesaving practices and the use of resuscitators.

At the request of the Ministry, the Ontario Safety League gave a series of courses to visitors in Provincial Parks on safe practices in canoeing, camping and outdoor living.

Workmen's Compensation – A total of 999 compensable claims were accepted during the year, and the Ministry's costs amounted to $423,302.57, including pensions and administrative charges. The lowest injury frequency rate was 12.8, attained by Northeastern Region.

ADMINISTRATIVE SERVICES BRANCH

Operations Section

OFFICE MANAGEMENT

This Unit is responsible for the design, standardization, issuance and replacement of uniforms. The existing 23 uniform types are being reduced in number and redesigned. All uniformed ministry staff should have a new look by fall, 1976. Other responsibilities include the following.

1. The continual updating of the ministry's listing in telephone directories across the province.
2. Preparation of input information for the government telephone directory.
3. The issuance of 1,500 telephone credit cards.
4. The issuance of identification cards (five types) and emergency pass cards to ministry staff.
5. All branch personnel and accounting functions.
6. The distribution of all government manuals and their revisions, as well as the ministry's policy and procedure directives and key personnel directory.
7. The equipment inventory control system and main office equipment inventory control records.
8. The management of over 200,000 active Crown Land files and the several incoming documents that necessitate the recording of over 140 entries daily on the cross reference index system, and the retrieval of over 255 files daily.

The Branch is a support group offering the administrative services that lie outside the personnel and financial fields.

PURCHASING

This Unit is vitally concerned with matters of demand and supply for furnishing the means by which the ministry's work is maintained and furthered. Due to continuing expansion and reorganization, purchasing activity was at full pace. Basically, it is a matter of supply an; demand with the Purchasing Section ensuring that the ministry's requirements are met immediately, economically, and with the best quality available. Over-all value is required for money expended.

With the many urgent and complex issues encountered due to the economic crises throughout the year and the resultant shortages of commodities, substitution and postponement were involved in some instances. Among the lengthy list of purchases were the acquisition of anti-freeze, lumber, litter and garbage bags, fish food, motor vehicles, safety hard hats, research equipment, uniform items, tree nursery equipment, fire hose, tires, office machines and field party equipment.

Over 27,000 requisitions were received, resulting in the issuance of some 12,000 purchase orders, 13,424 central stationery requisitions, 748 central duplicating requisitions, 612 requisitions for telephone work, and 1,522 printing requisitions.

CENTRAL SUPPLY WAREHOUSE

The Unit received a total of 650 tons of supplies and equipment at the King Street warehouse. Shipments, totalling over 286 tons, were made by express, freight, transport, mail and by internal supply to Ministry offices. The Whitney Block stockroom distributed supplies for the Whitney Block from the main warehouse on King Street.

Approximately 50 types of licences and permits were distributed to field offices and 4,000 private agents who sell licences to the public. The licen ces and permits total over 3½ million, and include hunting, angling, bait-fish, roll-net, frog, trapping, guide, duck, provincial park permit, etc.

Ministry uniforms were shipped from stock to personnel upon receipt of a requisition. The whiteprint copy centre prints maps for the Division of Mines publications office for distribution to the public. These copies total over 41,000.

There was liaison with the Ministry of Government Services on Ministry activities pertaining to the Government Visual Identity Program, mail services, and co-ordinating interoffice communications within the Ministry.

Services Section

ACCOMMODATION OFFICE

The accommodation office is responsible for the directing and co-ordination approval of all leasing transactions and land purchases for the erection of buildings as well as their construction and maintenance; the preparation of the Ministry master accommodation plan and the establishment of immediate, medium and long range accommodation objectives; the co-ordination of the funding requirements for all general and special-purpose facilities involving major and minor capital improvements; the planned program for the inspection of Ministry facilities to promote and improve communication between field and main office; and the maintenance of official liaison with the Ministry of Government Services in all matters pertaining to accommodation, including provision of funds.

PUBLIC SERVICE CENTRE

A consolidation of the Mines Publications Office and the Aerial Photo Library with the Map Office at the last named location will enable the Ministry to provide more efficient and effective service to the public and government agencies.

The Centre will be responsible for the sale and distribution of Ministry publications including geological maps, reports and circulars and other technical mining publications, as well as geographical maps, forest resources inventory maps, lake contour maps and the Provincial Topographic map series. The National Topographic map series and publications of the Ministry of Transportation and Communications will also be available.

Copies of aerial photographs in contact or enlarged format will be sold at the Centre.

Hunting and fishing licences will be sold at the Centre during the 1975-6 fiscal year.

A.D.P. KEY PUNCH UNIT

This Unit accepts for keying the source documents for the Ministry's production data processing systems; schedules computer runs and sees that the desired reports are distributed to user-branches; maintains Ministry magnetic tape library; administers the Ministry's magnetic tapes retained in the library of the Central Computing Branch; and keys the data from source documents on to magnetic tape or punched cards in a predetermined format. The cards or tape are interpreted by the Ministry's computer programs to produce the desired reports. Approximately two million records are keyed annually.

Records/Forms Management Section

This Section is the operating arm of the Ministry Records Management Committee. The Committee ensures that the Ministry complies with The Manual of Administration Directive and The Archives Act and that the goals and objectives of the Ministry agree with those of the government as a whole. The Section is formally divided into two distinct units: Records Management and Forms Management.

The Records Management Unit is responsible for maintaining an accurate inventory of all records, records equipment and microrecording equipment; control over the initiation, maintenance, protection, retention and disposition of all Ministry records; conducting feasibility studies regarding all microrecord systems and submitting all proposals to the Ministry Records Management Committee; conducting training seminars for the Ministry in all aspects of records management; and developing Ministry file classification plans.

The Forms Management Unit is responsible for establishing, maintaining and reviewing an inventory of Ministry forms; reviewing and approving all requests for forms printing; improvement in design of necessary forms by adherence to Ministry and Government-wide design standards; providing forms analysis and design service to users to ensure that Ministry forms will accomplish necessary operations in the most efficient and economical manner to achieve the desired results; conducting in-depth analysis of all Ministry forms to simplify the flow of each form in use in a system, and to simplify the preparation and handling of the form by removing all superfluous and redundant data with emphasis on consolidation, standardization and elimination; providing technical guidance to form originators; and conducting training seminars in forms management and design for Ministry personnel.

PERSONNEL BRANCH

SENIOR ADMINISTRATION STAFF MARCH 31, 1975

DEPUTY MINISTER — Dr. J. K. Reynolds

ASSISTANT DEPUTY MINISTERS

- L. Ringham, *Northern Ontario*
- W. T. Foster, *Southern Ontario*
- A. J. Herridge, *Resources and Recreation*
- J. W. Giles, *Lands and Waters*

REGIONAL DIRECTORS

- J. R. Oatway, *Northwestern (Kenora)*
- R. A. Baxter, *North Central (Thunder Bay)*
- G. A. McCormack, *Northern (Cochrane)*
- J. M. Hughes, *Northeastern (S. S. Marie)*
- J. S. Ball, *Algonquin (Huntsville)*

T. W. Hueston, *Eastern (Kemptville)*
A. H. Peacock, *Central (Richmond Hill)*
W. H. Charlton, *Southwestern (London)*

EXECUTIVE DIRECTORS

J. W. Lockwood, *Division of Forests*
G. A. Jewett, *Division of Mines*
K. K. Irizawa, *Division of Fish and Wildlife*
J. W. Keenan, *Division of Parks*
L. H. Eckel, *Division of Lands*
W. G. Cleaveley, *Field Services Division*
G. D. Spry, *Finance & Administrative Division*

DIRECTORS

R. M. Dixon, *Forest Management Branch*
D. P. Drysdale, *Timber Sales Branch*
D. H. Burton, *Forest Research Branch*
Dr. E. G. Pye, *Geological Branch*
Dr. T. P. Mohide, *Mineral Resources Branch*
D. A. Moddle, *Mineral Research Branch*
P. B. McCrodan, *Mines Engineering Branch*
D. R. Johnston, *Wildlife Branch*
K. H. Loftus, *Sport Fisheries Branch*
M. J. Brubacher, *Commercial Fish & Fur Branch*
J. D. Roseborough, *Fish & Wildlife Research Branch*
R. H. Hambly, *Park Management Branch*
T. E. Lee, *Park Planning Branch*
R. G. Bowes, *Historical Sites Branch*
J. McGinn, *Lands Administration Branch*
R. J. Burgar, *Land Use Co-ordination Branch*
R. G. Code, *Surveys and Mapping Branch*
W. L. Sleeman, *Forest Fire Control Branch*
T. C. Cooke, *Air Service Branch (S. S. Marie)*
S. B. Panting, *Engineering Services Branch*
A. D. Latornell, *Conservation Authorities Branch*
A. C. Goddard, *Financial Management Branch*
R. V. Scott, *Northern Affairs Branch*
H. B. Farrant, *Personnel Branch*
J. A. Queen, *Administrative Services Branch*
F. Moritsugu, *Information Branch*
Dr. W. R. Henson, *Policy Research Branch*

DISTRICT MANAGERS

W. D. Adlam, *Ottawa District*
R. P. Alton, *Wawa District*
E. N. Arbuckle, *Espanola District*
J. R. Bailey, *Moosonee District*
R. G. Bailey, *Napanee District*
M. P. Barker, *Atikokan District*
L. L. Bronson, *Pembroke District*
W. H. Cantelon, *Tweed District*
W. R. Catton, *Cambridge District*
J. K. Cleaveley, *Geraldton District*
D. J. D'Agostini, *Fort Frances District*
P. R. Davidson, *Aylmer District*
J. E. Dickenson, *Niagara District*
C. Dionne, *Gogama District*
T. E. Dodds, *Ignace District*
C. E. Emblin, *Hearst District*
H. P. Endress, *Dryden District*
E. W. Everley, *Red Lake District*
D. R. Fortner, *Chatham District*
E. G. Gillespie, *Kenora District*
O. Goodman, *Bancroft District*
C. R. Gray, *Lindsay District*
L. J. Haas, *Terrace Bay District*
D. L. Hagar, *Blind River District*
J. E. Hamilton, *Thunder Bay District*
G. O. Koistinen, *Nipigon District*
J. H. Lever, *Algonquin Park District*
R. G. Lightheart, *Kapuskasing District*
W. J. Lovering, *Owen Sound District*
W. D. Mansell, *Wingham District*
R. B. McGee, *Simcoe District*
D. E. McHale, *Sudbury District*
J. G. Minor, *Kirkland Lake District*
J. R. Morin, *Cornwall District*
D. O'Grady, *White River District*
A. F. Papineau, *Timmins District*
W. R. Peck, *Parry Sound District*
C. E. Perrie, *Sioux Lookout District*
E. Rogers, *North Bay District*
J. E. Rumney, *Temagami District*
W. D. Schafer, *Huronia District*
J. H. Sellers, *Sault Ste. Marie District*
F. E. Sider, *Maple District*
J. M. Small, *Chapleau District*
R. W. Tippett, *Bracebridge District*
R. H. Trotter, *Brockville District*
W. Vonk, *Lanark District*
D. D. White, *Minden District*
G. A. Wright, *Cochrane District*

TOTAL STAFF March 31, 1975

	Regular	Proba-tionary	Unclassified	Total
Main Office	771	340	174	1,285
Field Offices	2,534	439	1,736	4,709
TOTAL	3,305	779	1,910	5,994

Total Complement	4,311
Vacancies in Complement	254
Regular and Probationary Staff	4,084
New Employees Hired, 1974-5	386
Junior Rangers (summer casuals, 1974)	1,493

PROFESSIONAL STAFF March 31, 1975

Biologists	115
Engineers	24
Engineers of Mines	32
Foresters	240
Geologists	58
Park Planners	23
Scientists	50
Miscellaneous	50
TOTAL	592

STAFF TURNOVER* March 31, 1975

Deceased	11
Transferred	21
Resigned	206
Dismissed	1
Released	5
Superannuated	80
Miscellaneous	20
TOTAL	344

**The ratio of separations to total regular and probationary staff at March 31, 1975, was 8.5 per cent.*

FINANCIAL MANAGEMENT BRANCH

This Branch provides accounting and financial administrative support services for the Ministry. It maintains main office records of revenue and expenditure, prepares financial statements, and supervises and co-ordinates the accounting functions of the divisional and field offices. Its responsibilities include budget preparation and control, development of accounting and costing systems, financial and cost analyses, pre-audit controls and procedures, and financial liaison with Management Board of Cabinet, the Provincial Auditor, and other ministries and agencies. The internal audit section provides a continuing review and assessment of accounting, financial and operational controls.

Financial Report for Year Ended March 31, 1975

Statement of Revenue

For Year Ended March 31, 1974 *Statement No. 1*

MINISTRY ADMINISTRATION			
Recovery of Prior Year's Expenditures		$ 15,219	
Sale of Maps, Publications, etc.		380,874	
Rentals – Ministry Houses		347,971	$ 744,064
LAND MANAGEMENT			
Recovery of Prior Year's Expenditures			
Conservation Authorities	$ 488,156		
Land Acquisition	54,548		
Air Service	37,857		
Miscellaneous	19,275	$ 599,836	
Taxation Mines Acreage Tax		697,562	
Royalties – Forest Protection Charges		1,837,245	
Fees and Licences Mines		496,392	
Public Domain			
Gas and Mining Leases	$ 990,396		
Leasing and Licensing of Lands	780,326	1,770,722	
Sales			
Land and Buildings	$ 231,369		
Recovery Fire Fighting Costs	80,305		
Equipment	4,976		
Air Service Flying Fees	531		
Sundry Sales	19,507	336,688	
Reimbursements of Expenditures – Government of Canada			
ARDA – Conservation Authorities	$ 501,690		
ARDA – Flood Control for Agricultural Lands	74,250		
Dams, Reservoirs and Channel Improvements	327,951		
Flood Hazard Mapping	47,388	951,279	6,689,724
OUTDOOR RECREATION			
Recovery of Prior Year's Expenditures			
Federal Sales Tax – Old Fort William Historical Park	$ 172,146		
Inverhuron Park Project	82,139		
Nanticoke Agreement	7,650	$ 261,935	
Recreation Areas			
Park Entrance and Camping Fees	$ 4,454,613		
Park Concessions	161,690		
Park Miscellaneous	27,675	4,643,978	
Historical Sites			
Fees	$ 154,060		
Sales	25,857	179,917	
Fish and Wildlife			
Hunting and Fishing Licences	$10,632,875		
Royalties	310,968		
Confiscated Articles	41,489		
Miscellaneous Fish and Wildlife	93,293	11,078,625	
St. Lawrence Parks			
Fees	$ 1,495,828		
Sales	1,022,781		
Facilities	80,969		
Land and Building	31,135		
Miscellaneous	10,567	2,641,280	
Carried Forward		$ 18,805,735	$ 7,433,788

Statement of Revenue (Continued)

For Year Ended March 31, 1975

Brought Forward		$ 18,805,735	$ 7,433,788
Frost Centre			
Facilities		$ 173,450	
Reimbursements of Expenditures – Government of Canada			
ARDA – Park Improvements		68,882	19,048,067
RESOURCE DEVELOPMENT			
Renewable Resource Development			
Recovery of Prior Year's Expenditures			
Logging Roads – Construction Costs		$ 24,397	
Forest Management			
Stumpage	$19,975,598		
Forest Products	215,046		
Stock Production	200,566		
Forest Management	133,588		
Miscellaneous Timber	25,517	20,550,315	
Reimbursement of Expenditures Gov't of Canada			
Forest Management			
ARDA – Private Land Forestry	$ 500,000		
ARDA – Forest Stand Improvement	126,111		
ARDA – Grants to Municipalities and Conservation Authorities	68,952		
Commercial Fish and Fur			
Resource Development Agreement	236,796		
Freshwater Fish Marketing Agreement	49,302		
Industrial Development Agreement	6,939	988,100	21,562,812
NON-RENEWABLE RESOURCE DEVELOPMENT			
Mineral Management			
Recovery of Prior Year's Expenditures			
Mine Rescue Stations – Recovery of Operational Costs		$ 94,849	
Mining Tax		152,105,039	
Royalties		763,939	
Fees Licences		122,902	
Miscellaneous		8,526	153,095,255
MISCELLANEOUS			
Recovery of Prior Year's Expenditures			9,423
TOTAL REVENUE			$201,149,345

Total Expenditures Allocated to Main Services

For Year Ended March 31, 1975

PROGRAMS	Activity Total	Sub-Activity Total	Land Management
	$	$	$
MINISTRY ADMINISTRATION			
(Pro-rated by Operating Activities)			
Main Office	2,560,263	2,560,263	207,637
Field Offices	6,879,203	6,879,203	557,903
Financial Management	2,245,452	2,245,452	182,106
Administrative Services	2,082,242	2,082,242	168,870
Information Services	1,667,535	1,667,535	135,237
Personnel	589,023	589,023	47,770
Junior Rangers	1,780,492	1,780,492	112,332
Northern Affairs	971,133	971,133	
Youth Corps (S.W.O.R.D.)	3,620,222	3,620,222	419,222
	22,395,565	22,395,565	1,831,077
LAND MANAGEMENT			
Program Administration (pro-rated by Activities	942,532	942,532	200,571
Land and Water Protection	16,713,686		
Protection Services		5,049,326	642,779
Communications		736,345	62,442
Fire Control		6,560,617	
Equipment and Plant Operation		2,656,752	225,293
Recreation Oriented Water Facilities		1,147,016	802,911
Flood & Erosion Control Facilities		167,530	117,271
Ministry Service Facilities		396,100	277,270
Air Service	2,531,005	2,531,005	168,565
Extra Fire Fighting	8,824,741	8,824,741	
Resource Access	9,497,082		
Forest & Logging Access Roads		3,956,115	269,294
Crown Land Subdivision and Ministry Service Roads		292,656	26,046
Recreation Access, Public Transport and Agreement Roads		875,925	77,957
Northern Ontario Resources Transportation Roads		4,372,386	1,661,507
Land & Water Classification	5,485,752		
Lands Service		754,424	360,539
Surveys and Mapping		3,047,369	1,230,438
Inventory		961,325	308,218
Land Use Co-ordination		722,634	722,634
Land, Water and Mineral Title Administration	4,927,707		
Land, Water and Mineral Title Service		1,218,746	555,431
Public and Mining Lands		3,708,961	3,021,601
Conservation Authorities	29,777,839		
Conservation Service		1,501,713	
Grants		28,276,126	
Land Acquisition	7,432,570	7,432,570	77,795
	86,132,914	86,132,914	10,808,562
OUTDOOR RECREATION			
Program Administration (Pro-rated by Activities)	1,977,603	1,977,603	
Recreational Areas	29,116,395		
Parks and Historical Sites Services		11,681,446	
Crown Land Recreation Management		972,662	
Park Management		10,030,944	
Park Planning Project		1,523,792	
Park Development Projects		4,907,551	
Fish and Wildlife	12,628,081		
Fish and Wildlife Service		3,522,136	
Wildlife		3,198,046	
Fisheries		5,907,899	
St. Lawrence Parks Commission	4,807,389	4,807,389	
	48,529,468	48,529,468	

Environ-mental Protection	Parks & Historical Sites	Fish & Wildlife	Forest Management	Mineral Management	Conservation Authorities	Others
$	$	$	$	$	$	$
397,353	729,675	324,897	658,244	207,381	35,076	
,067,652	1,960,573	872,971	1,768,643	557,216	94,245	
348,494	639,954	284,948	577,306	181,881	30,763	
323,164	593,439	264,236	535,344	168,662	28,527	
258,802	475,248	211,610	428,723	135,070	22,845	
91,416	167,871	74,747	151,438	47,711	8,070	
311,677	785,959	112,421	457,566	537		
						971,133
392,432	940,172	1,190,691	640,055	37,650		
,190,990	6,292,891	3,336,521	5,217,319	1,336,108	219,526	971,133
383,987	44,205	46,372	156,272	77,288	33,837	
,082,109	454,439	357,997	374,660	117,649	19,693	
114,060	209,122	94,179	187,694	58,981	9,867	
,560,617						
411,531	754,517	339,799	677,206	212,806	35,600	
22,940	57,351	263,814				
3,351	8,377	38,531				
7,922	19,805	91,103				
887,624	186,788	861,048	368,514	46,064	12,402	
,824,741						
158,043	127,930	211,628	3,174,252	14,968		
21,364	21,657	30,144	193,445			
63,943	64,818	90,220	578,987			
			1,574,059	1,136,820		
		4,979	147,792	213,955	27,159	
			304,522	1,341,993	170,416	
		30,968	622,139			
	417,672	18,773	1,915	224,955		
				687,360		
					1,501,713	
					28,276,126	
	7,007,132	315,512	32,131			
,542,232	9,373,813	2,795,067	8,393,588	4,132,839	30,086,813	
	1,441,079	536,524				
	11,681,446					
	972,662					
	10,030,944					
	1,523,792					
	4,907,551					
		3,522,136				
		3,198,046				
		5,907,899				
	4,807,389					
	35,364,863	13,164,605				

Total Expenditures Allocated to Main Services (continued)

For Year Ended March 31, 1975

PROGRAMS	Activity Total $	Sub-Activity Total $	Land Management $
RESOURCE PRODUCTS			
Program Administration (Pro-rated by Activities)	994,661	994,661	
Mineral Management	6,395,778		
Mines Service		2,628,013	
Mineral Policy Development and Taxation		303,046	
Industry Support and Safety Service		1,182,128	
Geological Survey, Inventory and Analysis		2,102,991	
Mine Rescue		179,600	
Forest Management	24,904,569		
Forest Service		7,931,584	
Silviculture Operations		7,822,114	
Silviculture Support		4,381,159	
Timber Management		4,769,712	
Commercial Fish and Fur	1,122,714	1,122,714	
	33,417,722	33,417,722	
TOTAL EXPENDITURE	190,475,669	190,475,669	12,639,639
Percentage of Total	100%		6.64%

Environ-mental Protection $	Parks & Historical Sites $	Fish & Wildife $	Forest Management $	Mineral Management $	Conservation Authorities $	Others $
		34,415	763,999	196,247		
				2,628,013		
				303,046		
				1,182,128		
				2,102,991		
				179,600		
			7,931,584			
			7,822,114			
			4,381,159			
			4,769,712			
		1,122,714				
		1,157,129	25,668,568	6,592,025		
3,733,222	51,031,567	20,453,322	39,279,475	12,060,972	30,306,339	971,133
12.46%	26.79%	10.74%	20.62%	6.33%	15.91%	.51%

POLICY RESEARCH BRANCH

The Branch functions as a part of the Deputy Minister's office. It is organized to provide research supporting policy development in fields such as environmental quality, Ministry research and development, proposed water diversions, industrial development, unorganized areas of the north, resource prices, resource transportation, resource allocation, recreation demand and supply, and long-range planning. The Branch also provides:

(1) Ministry liaison with other ministries and central agencies of government;

(2) Development of Management Information System and the operation of Ministry libraries;

(3) Technical services in areas such as biometrics, economics, and various areas of biology; and

(4) Technical studies of natural resource management in other areas – notably in the U.S.S.R.

THE MINING AND LANDS COMMISSIONER

The Mining and Lands Commissioner exercises judicial, quasi judicial and administrative powers and duties under The Beach Protection Act, The Mining Act and The Mining Tax Act, 1972, and regulations made under The Ministry of Natural Resources Act, 1972, assigning powers and duties of the Minister to the Commissioner.

Orders and judgements issued under The Mining Act during the fiscal year were as follows:

In addition to hearings under The Mining Act, one hearing lasting 34 days was held under The Beach Protection Act. Two appeals were heard under The Conservation Authorities Act and three such appeals were withdrawn, settled or abandoned. Sittings were held at Kirkland Lake, Timmins, Toronto, Thunder Bay and Windsor.



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Minister of Natural Resources

Annual Report

1976

Annual Report

of the Minister of Natural Resources
of the Province of Ontario
for the fiscal year ending March 31, 1976
$1.00

TO HER HONOUR
The Lieutenant-Governor
of the Province of Ontario

MAY IT PLEASE YOUR HONOUR
The undersigned begs respectfully to present to your Honour the Annual Report of the Ministry of Natural Resources for the fiscal year beginning April 1, 1975, and ending March 31, 1976.

Leo Bernier

LEO BERNIER
Minister

Ontario

Ministry of
Natural
Resources

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Foreword

This report is a summary of the Ministry's activities during the fiscal year which ended March 31, 1976. Additional detail is reported in *Statistics, 1976,* released concurrently, and in *Ontario Mineral Review, 1975.*

The goal of the Ministry of Natural Resources is defined as follows:

"To provide from Crown lands and waters, and to encourage on private lands and waters, a continuing combination of resource development, outdoor recreation and quality environment most consistent with the social and economic well-being of the people of Ontario."

Highlights of the fiscal year ended March 31, 1976

- Visitors to Provincial Parks numbered 11,139,864, and 1,454,270 participated in the educational activities of the parks' interpretive program.
- A winter program, funded to $500,000, was instituted to assist clubs and municipalities maintain 7,000 miles of snowmobile trails. These were additional to 1,500 miles of trails provided on public lands.
- Agreements with private landowners under The Woodlands Improvement Act increased by 753 to 4,404, bringing 218,663 acres under agreement.
- In the inventory of Ontario lakes and streams, 580 lakes (with an area of 550,000 acres) and 1,450 miles of stream were examined; 514 fishing maps have been prepared for public use and 40 more are under preparation.
- During the summer of 1975, Geological Branch had 43 survey parties in the field. On the Precambrian Shield, 24 field parties mapped 8,100 square miles. Other surveys included the assessment of fossil fuel potential.
- The program to establish a breeding population of wild Canada geese in southern Ontario was declared successful when the number of breeders or potential breeders was estimated at 10,000.
- Forest fires numbered 3,146, breaking a 39-year-old record, but the burned-over area was held to 41,651 acres, less than one-thirtieth of the 1974 total.
- An equal opportunity program for women employees was begun following the appointment of a women's co-ordinator.
- Campers in Provincial Parks numbered 1,621,887 and camper days 3,979,473, both new records.
- Management plans were completed on 54,765 square miles of Crown lands in 58 forest management units. On 105,251 square miles in 49 units, management plans were under preparation or consideration for approval.
- Fifteen-minute quadrant maps of southwestern Ontario, showing all gas and oil wells, were updated weekly and made available to the public. Well samples were stored and made available to geologists and mining engineers.
- About 6.4 million fish were stocked in Ontario waters.
- A total of 4,724 miles of forest access, logging access and Ministry service roads were maintained. The Ministry shared the cost of maintaining 472 miles of private forest roads.
- Indians in northern communities were assisted in lumbering, commercial fishing and trapping. The trapper education program was upgraded.
- Grants to Conservation Authorities totalled $31,399,736.
- Four new Provincial Parks were opened, bringing the total to 121.
- Sports Fisheries Branch undertook the administration of Boating Restriction Regulations under the Canada Shipping Act.
- On Crown lands, 254,681 acres of forests received silvicultural treatment. Trees were marked for cutting on an additional 116,165 acres.
- A geochronology laboratory was established at the Royal Ontario Museum by an agreement between the Ministry and the Museum. It facilitates the investigation of radiometric ages.
- Agreement Forests, managed by the Minister for municipalities, Conservation Authorities and the Government of Canada, reached a total of 258,461 acres.
- The service of the Temiskaming Testing Laboratory was extended to include car sampling of low-grade concentrates.
- A system of wildlife management units was developed for northern Ontario.
- About 1,400 water access points were maintained on public lands for outdoor recreationists.
- A total of 1,578 licences was issued under The Pits and Quarries Control Act.
- An objective was reached when a northern goose camp, previously operated with the assistance of Ministry staff, was turned over completely to Indian management.
- Payments under the Mineral Exploration Assistance Program amounted to $296,400.
- Experimental netting and trawling operations were conducted on Lake Superior, Lake Nipissing and several northwestern lakes to extend commercial fisheries.
- The value of mineral output in Ontario was tabulated by major economic areas, Natural Resources regions and mining centres.
- The Ontario Trails Council was appointed for a two year period.
- The Policy Co-Ordination Secretariat was established.

Division of Forests

Forest Research Branch

The Branch provides scientific and technical information to improve the management of forest resources in Ontario.

For artificial regeneration, the production of improved seed is a major consideration. The spruce research program includes selection of seed production areas and plus trees, determining the effect of gibberellic acids and fertilizers on flower and seed production, controlled crossing of native and exotic spruces to obtain hybrid vigor, evaluating the effect of seed zones (regions) in productivity systems, and determining the validity of moving spruce stock between regions. Early white spruce provenance tests were concluded.

White pine breeding and selection aim at better growth and resistance to blister rust. In hard pine research, greater variation is sought using irradiated pollen. A new program on the improvement of larch was initiated.

The production of fast growing species to satisfy the needs of industry and the farming community in southeastern Ontario is an important and complex program. Fast growing hybrid poplars are promising as a short-rotation source of fibre for pulp. Poplar breeding and propagation have lead to extensive field testing in co-operative programs between research and management. Industry has shown considerable interest. Related studies deal with growth-site relationships, fertilization, nutrition and root development of hybrid poplar.

The production of vigorous planting stock and development of outplanting methods are primary goals of a number of research programs that include more efficient ways of raising seedlings (particularly black spruce) in nurseries and greenhouses, frost hardiness and dormancy, internal moisture conditions of stock, over-winter storage, stock handling and planting techniques. Some relatively sophisticated methods are being modified for field use.

In the spruce-fir-aspen forest on upland sites – an important forest type in northern Ontario – research concentrates on the ecology and productivity of spruce, growth responses in balsam fir, and cull in aspen.

Silvicultural research in hardwood forests in southern Ontario deals with regeneration of yellow birch and sugar maple, release of maple advance growth for quality wood production, planting of walnut and red oak with poplar as a nurse crop, and testing the suitability of tulip poplar and white ash. For the improvement of lowland forests the selection, vegetative propagation and field testing of Jackii poplar, silver maple and red ash continued.

The influence of site on tree growth is recognized. Studies include the use of fire weather index for estimating soil moisture content, nutrient content of forest humus, nutrient requirements of trees, and root development, particularly of red pine.

Growth prediction is important for management planning. Number and grade of pole-sized red pine emanating from plantations during the next two to three decades was estimated from yield studies. Variable density yield tables for hardwoods are being developed. Tests for stand normality for use on stand tables are promising.

The Branch publishes an annual research review. Forest Research Reports and Forest Research Notes are produced in addition to journal papers. Extension work includes courses in tree marking and soils, and contributions to timber certificate courses.

Forest Management Branch

The objective of the Branch is to produce optimum and continuous industrial, social and environmental benefits from public forests, and to encourage and assist similar production on private lands in Ontario.

Tree Seed Program

The inventory of forest tree seed in storage at the Ontario Tree Seed Plant, Angus, as of June 1, 1975, was 3,092,000,000 viable seed of 85 species, weighing 14,800 kgms and valued at $680,000.

The year 1975 was a good crop year for many of the species used in the reforestation program.

1975 Seed Crop by Species	Hectolitres Collected
Red Pine	431
Jack Pine	9,858
White Spruce	628
Black Spruce	343
Black Walnut	2,068
Other Species	643
TOTAL:	13,971

Seed Distribution

A total of 1,255,000,000 viable seeds was used to carry out 185 regeneration projects in the Province during 1975. This was an increase of 46 projects and 429,000,000 viable seeds over 1974. The seed was used in three main programs: nursery stock production, 336,000,000; tubelings, 14,000,000; and direct seeding, 905,000,000 viable seeds.

Tree Improvement

Plus trees, Collected	5,800 scions
Planted	2,700 grafted trees
Seed Collection Areas	4,900 acres
Seed Production Areas	620 acres
Seed Orchards	190 acres

This program is designed to improve seed quality and increase the quantity of available tree seed to meet the requirements of the production policy.

Planting Stock

Distribution, conifers	48,724,136
hardwoods	2,220,597
Total	50,944,733
Production Targets seeded	83,183,000

The reduction in planting stock distribution and production is due to an increase in other methods to obtain regeneration on Crown lands (and meet production targets) such as direct seeding and modified harvest cut.

Development

Field tests under the direction of mechanical research staff were carried out on the Ontario Mark III planter in the Northern Region and at the Maple Research Station.

Work was completed on converting a used cigarette machine to make ¾-inch soil-filled containers for growing

tree seedlings. Later in the season, the machine was modified to produce 600,000 7/16-inch containers for growing spruce germinants for tree nursery production.

Private Lands

The Woodlands Improvement Act	Number of Agreements	Acres
New agreements activated 1975-76	753	28,403
Agreements in effect to March 31, 1976	4,404	218,663

Number of trees planted: 10,707,850.

These operations are carried out on private land under The Woodlands Improvement Act agreements. The acreage treated is an integral part of forest production targets, particularly in southern Ontario where there is no significant Crown land area.

Advisory Services

1. Number of public inquiries serviced . . . 54,018
2. Number of field inspections made 6,061
3. Number of forest management programs prepared 353
4. Total area for which management programs were prepared . . . . . 16, 105 acres
5. Trees purchased and planted by private landowners 8,593,424
6. Timber marked for harvesting:
   Sawtimber . . . . . 1,500,026 cu.ft.
   Pulpwood . . . . . 13,503 cords
7. Activities with youth groups . . . . . 260 groups
8. Public education acitivites and services. 1,275 items
9. Days of forestry instruction provided to schools, colleges, universities . . . . . 463 days

The above data are a measure of the forestry extension program offered to all landowners. A change in landowner management practices is desired to ensure the establishment and maintenance of private forests for the production of forest products and forest values.

Agreement Forests

Agreement Holders	Added 1975-6	Released 1975-6	Total Acreage
1 Goverment of Canada	.....	.....	3,532.00
24 Conservation Authorities	1,211.00	4.91	93,489.06
19 Counties	1,101.00	307.61	143,586.36
10 Townships	.....	.....	3,029.24
6 Regional Municipalities	25.00	1.63	14,824.03
60 Totals	2,337.00	314.15	258,460.69

The agencies reported above have forest management agreements with the Minister under the authority of The Forestry Act. The agency's forests are an integral part of forest production targets, of particular importance in districts with no significant Crown land areas.

Classification of Cut-Over Forest Land, 1975-6

Areas in Acres

Cutting Method	Regeneration Required	Satisfactory Natural Regeneration	Regeneration not Required	Total
Clear Cut	264,895	83,267	–	348,162
Selection Cut	–	40,295	–	40,295
Partial Cut	–	–	97,748	97,748
TOTAL	264,895	123,562	97,748	486,205

Regeneration and Tending of Forest Land, 1975-6

Areas in Acres

Treatment	Crown Land	Agreement Forests	W.I.A.	Sub-Total	Other Patent Lands	Total
REGENERATION						
Planting Nursery Stock	49,561	1,801	8,769	60,131	7,291	67,422
Container Stock	6,837	–	–	6,837	–	6,837
Seeding	58,095	–	–	58,095	–	58,095
Modified Harvest Cut	23,725	281	57	24,063	388	24,451
Scarification	11,862	–	–	11,862	–	11,862
Seed Trees	3,781	–	–	3,781	–	3,781
Total	153,861	2,082	8,826	164,769	7,679	172,448
TENDING						
Hand Cleaning	9,265	2,284	326	11,875	–	11,875
Herbicide Spraying	15,136	595	455	16,186	–	16,186
Thinning Improvement Cuts	32,964	5,539	9,867	48,370	698	49,068
Pruning	1,385	1,084	550	3,019	–	3,019
Fertilization, Drainage	404	1,178	503	2,085	–	2,085
Total	59,154	10,680	11,701	81,535	698	82,233
TOTAL AREA TREATED	213,015	12,762	20,527	246,304	8,377	254,681
For Seeding, Planting or Modified Harvest Cutting						
Site Preparation	96,642	1,005	2,262	99,909	–	99,909
Tree Marking	91,061	6,330	13,794	111,185	4,980	116,165

Pest Control

The spruce budworm remained the most destructive forest pest in 1975. Infestation of balsam fir and white spruce occurred over a gross forested area of 33.2 million acres (13.3 million ha), an increase of 9.2 million acres (3.7 million ha) over 1974. The exceptionally warm and sunny weather that occurred throughout the Province during the latter part of May was a major factor contributing to the survival and development of the budworm.

Aerial spraying to control this pest was conducted on 34,000 acres. Two insecticides were used. Fenitrothion in water was applied in single (6,830 acres) or double (1,845 acres) applications at rates of two to four ounces of active material in 24 fluid ounces of spray mixture per acre, Dylox U.L.V. was used undiluted at the rate of 12 ounces of active material per acre (20,000 acres) and 24 ounces per acre (5,200 acres). In addition 650 acres were sprayed by aircraft and 50 acres by mistblower with the biological bacillus insecticide (Thuricide).

Other pest problems for which small scale control treatments were conducted were the white pine weevil and white grubs. The first large-scale operational control trial using virus from aircraft (308 acres) was carried out in Sand Banks Provincial Park with spectacular results. Some experiments to limit the spread of the root rot, *Formes annosus,* from infection foci in pine plantations were conducted employing the biological control agent, *Peniophora gigantea.*

Timber Sales Branch

The major responsibility of the Branch is the orderly disposition of the Province's timber resource through the administration of major sections of The Crown Timber Act. This is accomplished by the review and approval of forest management plans, the allocation of the Province's Crown timber to the forest industry through various statutory methods, the licensing of forest industry mills, the measurement of the harvested volume of Crown timber, and the monitoring of factors affecting the viability of the Province's forest industry.

Forest management plans provide the broad framework within which forest operations are conducted. More detailed operating plans for shorter time period identify the Crown timber stands to be harvested, regenerated and tended, and the roads and other improvements required on Crown, company and Agreement Forest management units.

Management Plans, March 31, 1976

Areas in Square Miles	Forest Management Units					
	Crown		Company		Agreement	
	No.	Area	No.	Area	No.	Area
Approved/Standard Plans	56	48,112	2	6,653	33	256
Plans Submitted for Approval	5	5,906	2	6,452	—	—
Plans being Prepared	15	21,801	27	71,102	27	144
Inventory required	3	5,136	—	—	—	—
Units not under Plans	9	24,292	—	—	—	—
Total	88	105,247	31	84,207	60	400

Timber Allocation

Crown timber is allocated to the Province's forest industry in accordance with forest management principles and industrial requirements. Crown timber harvesting licences provide the Province's forest industry with the legislative authority to harvest Crown timber on the basis of the annual allowable harvest.

Timber harvesting licences take one of several major forms and are specific as to geographic area, tree species, volumes, stumpage and other charges, and various control measures.

Forest industry mills are licensed to operate with respect to Crown and private timber supplies in a specific locality.

Crown Timber Licences

Areas under Licence at March 31, 1976	Number	Square Miles
Under Section 2, Crown Timber Act	26	228.9
Under Section 3, Crown Timber Act	399	94,994.5
Under Section 5, Crown Timber Act	15	76.9
Total	440	95,300.3

Mill Licences

	1971	1972	1973	1974	1975
Lumber Saw Mills					
8-hour capacity					
Capacity over 50M fbm	35	41	67	60	53
Capacity 10M to 50M fbm	79	88	96	104	98
Capacity under 10M fbm	560	536	531	570	569
Miscellaneous	91	83	49	40	45
Veneer Mills	27	29	25	26	23
Pulp Mills	24	23	23	24	23
Total	816	800	791	824	811

Pulp Chips, 1975

Ontario Production	Number of Mills	Bone Dry Tons
Shipments		1,283,006
Unsold Inventory		90,173
Total	102	1,373,179

Consumption of Ontario Chips Jursidictions	Number of Mills	Bone Dry Tons
Ontario	19	1,089,241
Quebec	6	133,925
Manitoba	1	445
U.S.A.	5	59,395
Total	31	1,283,006

Volume and Value of Wood Cut from Agreement Forests, 1975-6

Products	Cubic Feet	Value
Sawlogs	149,479.47	$ 39,776.29
Poles and Posts	94,809.60	31,252.44
Fuelwood	115,722.25	21,312.00
Pulpwood	1,135,351.50	56,468.27
Miscellaneous	6,460,00	6,131.73
Total	1,501,822.82	154,940,73

Forest Industry Development

This Section is concerned with the growth and development of the components of the Province's forest industry by monitoring the demand for, and supply of, timber products and the pattern of trade in these commodities, and by analyzing resource taxation and pricing. The Section assists in industrial expansion and regional development through industrial liaison, policy development and economic analyses.

Wood Measurement

The measurement of harvested timber, or scaling, determines the volume of timber removed from Crown land and Agreement Forests. It is the basis for the determination of public revenue and forest production statistics related to the forest industry. Only licensed scalers, approved by the Ministry, may carry out this important function. Timber measurement practices are under constant review to ensure they keep abreast of the latest harvesting techniques. During 1975-6, the seventh edition of "The Manual of Scaling Instructions" was published to reflect new measurement methods such as weight scaling and grade scaling.

Volume and Value of Wood Cut from Crown Lands, 1975-6

Tree Species	Cubic Feet	Bonus	Crown Dues	Stumpage Value
SOFTWOODS				
White Pine	$ 15,776,787.00	$ 619,983.54	$ 900,711.72	$ 1,520,695.26
Red Pine	7,158,688.19	245,800.56	407,115.09	652,915.65
Jack Pine	96,282,311.31	204,474,61	5,299,982.35	5,504,456.96
Pine, Mixed	621,040.92	478.65	25,302.42	25,781.07
Spruce	151,828,288.92	541,720.59	8,470,853.17	9,012,573.76
Hemlock	1,663,399.18	15,400.57	94,954.39	110,354.96
Balsam	9,640,667.65	31,676.56	537,658.16	569,334.72
Cedar	520,231.26	7,542.14	28,582.82	36,124.96
Tamarack	75,958.98	760.93	4,305.46	5,066.39
Softwoods, Mixed	66,552.45	28.77	1,418.67	1,447.44
Total Softwoods	283,633,925.86	1,667,866.92	15,770,884.25	17,438,751.17
HARDWOODS				
Maple	7,820,527.19	125,956.98	640,543.97	766,500.95
Yellow Birch	4,354,513.96	225,448.13	362,509.73	587,957.86
White Birch	2,172,478.21	26,718.70	28,396.50	55,155.20
Oak	264,956.01	15,010.56	16,484.24	31,494.80
Beech	348,225.97	12,085.05	28,128.34	40,213.39
Ash	38,336.84	1,160.70	2,873.89	4,034.59
Elm	56,534.67	1,463.21	6,888.60	8,351.81
Basswood	228,870.93	7,111.32	19,026.92	26,138.24
Butternut	9.91	0.53	0.53	1.06
Cherry	26,386.15	372.73	2,374.51	2,747.24
Poplar	24,267,230.73	81,518.88	299,119.46	380,638.34
Hardwoods, Mixed	3,855,349.22	33,526.13	49,497.12	83,023.25
Total Hardwoods	43,433,419.79	530,372.92	1,455,843.81	1,986,216.73
Grand Total	327,067,345.65	2,198,239.84	17,226,728.06	19,424,967.90

Division of Mines

Geological Branch

Geological Branch provides information on the geology and mineral resources of Ontario to encourage exploration and development of mineral wealth by the mining industry, and as a basis for land-use and transportation-route planning and the development of non-renewable resource utilization policy.

Geological, geophysical and geochemical surveys identify favourable locations for mineral and aggregate deposits and provide increased knowledge and understanding of the geological history of Ontario. Existing data on mineral deposits are being compiled, and new studies have been initiated. Educational programs and published reports and maps are available to the public.

The Branch administers the Mineral Exploration Assistance Program (MEAP) whereby the Government reimburses an individual or company one-third of the cost of an approved exploration expenditure (maximum $100,000) in any of six designated areas.

Precambrian Geology Section

During the summer of 1975, 24 field parties undertook interpretive mapping of rock formations of the Precambrian Shield. A total of 1,400 square miles was mapped at a scale of one inch to one-quarter mile for publication at one inch to one-half mile. Six reconnaissance and compilation projects covering 1,200 square miles were carried out for publication at one inch to one mile.

Operation Kenora-Ear Falls, a helicopter supported reconnaissance project, covered more than 5,500 square miles for publication at one inch to four miles. Four compilation sheets (one inch to four miles) were in preparation.

On the basis of field area location, the geologists of the Section are divided into North Archean, Central Archean, South Archean and Proterozoic mapping groups.

Phanerozoic Geology Section

The Section is responsible for the survey and analysis of post-Precambrian soil and rock materials in Ontario. Major thrusts are the stratigraphic mapping of Paleozoic and

Quaternary age sediments and the inventory of mineral aggregates. An important role is to provide information to, and liaise with, municipalities for aggregate resource planning.

During the summer of 1975, there were five Quaternary geology mapping parties in southern Ontario; these were located at Walkerton, Markdale, Simcoe, Durham, and Goderich.

One party carried out investigations of the landslide-susceptible Champlain Sea Clay in eastern Ontario, and one glacial geologist was attached to a geochemical survey party at Jellicoe in northern Ontario.

One Paleozoic geology field party investigated the rocks of the Niagara Escarpment as well as the rocks of the Galt-Brantford-Simcoe area. Mineral aggregate surveys were carried out for several townships in southern Ontario.

Geophysics/Geochemistry Section

Geophysical surveys carried out in 1975 included a gravity survey in the Uchi Lake-Birch Lake area. Combined geochemistry-Quaternary geology surveys were carried out in the Beardmore-Geraldton area. A geochemical-geological investigation of the relationships between massive suphide deposits and their volcanic host rocks was conducted in the Confederation Lake area with the Mineral Deposits Section.

The Section was responsible for the planning and implementation of the provincial level of a reconnaissance airborne radiometric survey in the Ignace-Sioux Lookout area. This survey is part of the Federal-Provincial Uranium Reconnaissance Program to provide information for exploration and assessment of uranium potential.

Development of computer-based techniques for processing and interpretation of geoscience data was continued. A plotter-digitizer facility was obtained to further enhance data interpretation capability.

Mineral Deposits Section

The Section studies deposits of both metallic and non-metallic minerals, their distribution, geology, reserves and potential. An important role is to provide reserve data and resource potential estimates for use in government planning, particularly for land use, parks and transportation corridors, and as background for studies by Mineral Resources Branch.

With Mineral Resources Branch, the Section drew up an Ontario Mineral Resource Classification scheme and co-operated in the National Uranium Resources Appraisal Program and a zinc resources inventory of Ontario. Studies included metal distribution maps for uranium-thorium, iron and nickel (published); gold, silver, basemetals, and molybdenum (in preparation); a series of mineral potential maps; the final volume of Gold Deposits of Ontario; a peat study; and a revision of silica and marble deposits.

Mineral Exploration Assistance Program

Government payments under MEAP for the fiscal year were $296,400 with a total government expenditure in the past five years of $1,698,461. A large area in eastern Ontario was added to the five other designated areas of Red Lake, Atikokan, Geraldton-Beardmore, Kirkland Lake and Cobalt-Gowganda. Open File Report 5209 covers MEAP to March 31, 1976.

Geochronology Laboratory

Geological Branch, in conjunction with the Department of Mineralogy and Geology, Royal Ontario Museum, established a geochronology laboratory at the Museum. This facility will provide the absolute radiometric ages necessary for unravelling the geological history of Ontario's Precambrian Shield and its mineral deposits.

Geological Branch will conduct a long-term program of radiometric age investigations with emphasis on mineralized areas such as Early Precambrian volcanic belts and on geological problems related to the formation of ore deposits.

James Bay Lowlands Program

The program for preliminary assessment of fossil fuel potential was continued. Geophysics/Geochemistry Section planned and co-ordinated airborne and ground geophysical surveys over the Onakawana lignite deposit to research and design geophysical methods for lignite exploration.

Phanerozoic Geology and Mineral Deposits Sections carried out investigations of the Cretaceous sediments in the Lowlands. Several Open File Reports on this program have been released.

Regional and Resident Geological Program

Regional and Resident Geologists' offices were maintained in the following centres: Kenora, Red Lake, Sioux Lookout, Thunder Bay, Sault Ste. Marie, Sudbury, Timmins, Kirkland Lake, Huntsville, Kemptville, Richmond Hill and London.

The principal function of regional and resident geologists is to provide consultative service to government, industry and public on the geology and mineral deposits of the Province. In carrying out this function, they conducted visits on a regular basis to operating mines and both active and inactive prospects.

They also undertook a variety of mapping projects and specific studies. An examination of gold associated with carbonate rocks in the Timmins area was initiated and slope stability studies were started on the geologically hazardous quick clays which underlie part of the Eastern Ontario Region. The latter study inaugurates a Regional Geologist's efforts on problems associated with geotechnical engineering.

Geoservices Section

The Geoservices Section provides a support and service function to Ministry geoscientists, management and public. Five subsections are formed according to functional responsibilities.

Scientific Review Office is responsible for the scientific review, editing and publication of all geoscience reports and preliminary maps. The following were printed during the year:

Geoscience Reports, Industrial Mineral Reports	21
Open File Reports	58
Miscellaneous Papers, Miscellaneous Publications	10
Reprints	4
Coloured Maps (cartography by Division of Lands)	40
Preliminary Maps	96

In addition, 55 reports were in progress and under review and several hundred illustrations were produced by the drafting unit.

Geoscience Data Centre performs tasks related to the gathering, research, compilation and computer processing of geoscience data on mineral deposits of Ontario; indexes publications released by Geological Branch and reports submitted for assessment work credit; and within its means investigates and improves upon existing data handling systems.

During the year, 1,300 Branch publications, MEAP reports and assessment work reports were indexed for computerized storage in the Ontario Index to Geoscience Data. Several computer retrievals were made for Branch geologists and a Township and NTS Index to Ontario Geoscience Reports was released as an Open File Report.

On-line access facilities to commercially-based bibliographic files, such as GeoRef, are now provided by the Centre.

The Centre updated or compiled some 290 Mineral Deposits Records for uranium deposits. In co-operation with Mineral Deposits Section, work has been started on

the creation of two computer-based files, one containing data on all Ontario's iron deposits and the other including geological data on diamond drill holes located in the Elliott Lake area.

Geoscience Information Office conducts and organizes classes of instruction in geology and mineral exploration, answers geological inquiries from the public, and prepares or assists in the production of popular brochures and guidebooks on the geology of Ontario.

A number of mineral education courses including two field courses and several field trips, were conducted. During the summer, half-day geological talks were arranged for Junior Ranger camps.

During 1975-6 three brochures for the general public were released – Amethyst: Purple Gemstone of the North; Bancroft Area Minerals; and Toronto's Geological Past: An Introduction.

Two annual publications of popular interest are Rocks and Minerals Information, listing sources of geological and mining information of general interest, and Ontario Mineral Review, an annual summary of mining and Ministry activities.

Assessment Files Research Office maintains, for public use, a library containing all technical surveys filed for assessment credit. In addition, prospectuses, summary reports from the Ontario Securities Commission and technical data, filed in accordance with MEAP, are also filed.

Technical Services Office arranges for the requisitioning, maintenance and cataloguing of all field equipment, vehicles, furniture and scientific instruments for Geological Branch.

Mineral Resources Branch

The prime objective of the Branch is to assure the orderly development and optimum use of provincial mineral resources in line with the Ministry's policy of broadening the base of mineral development and processing in Ontario. The most important function of the Branch is to provide the Minister of Natural Resources with in-depth researched information and mineral policy options, as well as to ensure equitable mining tax assessments. Major areas of responsibility for the Branch are as follows:

(a) Development and administration of mineral resource policies;

(b) Analysis of the effectiveness of present public policies in various jurisdictions in respect of mineral resource development;

(c) In-depth world-wide mineral commodity studies on each mineral element in provincial mineral reserves, with priorities set for nickel, copper, zinc, iron ore, precious metals, uranium and structural materials;

(d) Administration of The Mining Tax Act, The Petroleum Resources Act, The Pits and Quarries Control Act and certain parts of The Mining Act;

(e) In-depth analysis of the existing tax systems to develop a more effective mineral taxation policy;

(f) Economic studies of metal and mineral markets and factors affecting Ontario's mineral output;

(g) Federal-Provincial liaison on mineral resources problems;

(h) Determination of an inventory of the Province's mineral resources, commodity by commodity, and commercially viable ore reserves;

(i) Continuing analysis of the mineral reserves position against present and projected world supply and demand for minerals;

(j) In-depth studies of mining and exploration company decision-making processes;

(k) Preparation of plans to stimulate exploration for, and development of, mineral resources in Ontario; and

(l) Studies on economic behaviour of multi-national mineral resources companies.

Metallic Minerals Section

The objectives of the Section are 1) to provide effective metallic mineral policy options for the Division of Mines based upon in-depth research on a commodity or tropical basis, 2) to monitor metal market trends as well as technological progress in the mineral sector and, 3) monitor policy developments in other jurisdictions with respect to their anticipated impact on Ontario metal mining and processing.

On a commodity basis, a study entitled "Towards a Zinc Policy for the Province of Ontario" was completed and published as a policy background paper in December, 1976. Work on the revision and updating of the 1974 policy background paper on iron ore continued and will be completed by fall, 1977. A similar study on nickel was initiated before the end of the year. Due to the size and complexity of the subject, completion is expected in 1978.

The second stage of the development of an economic model of the mineral industry of Ontario was completed, and a summary report was released for publication in the Annual Review issue of *The Northern Miner*. The study in its entirety is being readied for publication late in 1977. A study of the economic growth debate in its relevance for Ontario mining has been carried to the same stage.

Studies of different aspects of the problems of Ontario's declining gold mining industry were carried out to provide background material for responses to a wide variety of submissions from interested parties.

In the area of energy resources, the Section continued to evaluate developments concerning the Onakawana lignite deposits and also detailed one mining engineer to co-operate with Ministry of Energy personnel in monitoring Ontario's stake in Syncrude.

In conjunction with Geology Branch staff, the Section completed work on an inventory of the zinc reserves of the Province and commenced inventory studies of its nickel reserves. The uranium reserves inventory was updated.

Although this mineral inventory work develops a crucial part of the data base necessary for the development of mineral policy options, publication is not possible due to the confidential nature of the company data involved.

Liaison with organs of the Federal government, of the Provincial governments and of some foreign jurisdictions, as well as with mining company representatives, continued on matters pertaining to Ontario Mineral Policy and mineral industry matters of mutual concern.

There was also continuing involvement in the issues evolving in connection with the administration of The Mining Tax Act and The Ontario Mining Act.

Industrial Minerals Section

The Section has two major functions:

1. Providing the input necessary to fulfill the role of the Branch in presenting industrial (non-metallic) mineral policy options for the Province; and

2. Administering The Pits and Quarries Control Act.

The policy function will be developed on a progressive basis to deal in turn with each industrial mineral and rock commodity by implementing the processes outlined as major areas of responsibility for the Branch.

The Section's function in administration of The Pits

and Quarries Control Act involves a dual role. On the one hand, consultation and guidance are provided to the Ministry's field offices which, through their pits and quarries inspectors, are responsible for implementing the requirements of the Act. On the other hand, the Section has been processing applications for pit and quarry licences forwarded from the field offices for the Minister's decision.

As of June, 1975, and December, 1976, respectively, the Ministry's Central and Southwestern Regions assumed the latter responsibility in keeping with Government's plans for decentralization of operations.

Three regional Mineral Aggregate Studies have been contracted out to consultants and completed. Those for the Central and Eastern Regions are published and available and the Southwestern study will be available early in 1977.

As of August 27, 1976, there were 278 geographic townships designated under the Act. Understandably, the majority of staff time has been expended in 1) liaison with inspectors, 2) processing the many applications, 3) explaining the Act and its purposes to applicants in personal and telephone interviews, and 4) participating in various relevant meetings.

A total of 1,578 Pits and Quarries Control Act licences have been issued in the designated areas.

Mining Tax Assessment Section

The Section experienced a major reorganization during 1975-6 to cope with the increased complexity of the Act, following the 1975 and 1976 amendments to the statute.

The Section provides draft mining tax assessments and financial data for the Mine Assessor to assist him in the administration of The Mining Tax Act and determination of the tax due.

At the end of last year, the Section staff consisted of one trained assistant mine assessor and an analyst. This staff has been augmented in 1976 by a section supervisor, two assistant mine assessors under training, and an assistant assessor under contract.

Mining tax returns were received for taxation year 1975 indicating estimated liability under the Act for 1975 operations of more than $50,000,000.

Petroleum Resources Section

The Section is responsible for all the activities associated with the oil and gas exploration, drilling and production industry in Ontario. These functions include the conservation and development of Ontario's petroleum resources in conjunction with acceptable environmental and safety standards.

Geological and engineering data are collected on all wells drilled in the Province and consolidated in the form of publications and maps which are made available to the public to encourage the equitable development of Ontario's petroleum resources.

The Section's staff includes qualified geologists, reservoir engineers and resource officers. As an integrated regulatory and scientific agency, it is able to advise Government on all problems arising from legislation and the wide variety of technical and scientific problems related to oil and gas exploration and development in Ontario and other areas of Canada.

The Section, operating under the authority of The Petroleum Resources Act and Regulations made thereunder, requires the submission of all information collected in the drilling and production of wells. This information is submitted in the form of core and drill cutting samples, engineering and geological completion reports, fluid analyses, monthly and annual production reports, and a variety of reports required of the various licences issued.

All data is validated by the appropriate regional resource officer and interpreted and transcribed by geologists and engineers into readily accessible forms by way of hard copy documents, microfilm, and computer output for both internal and public use.

Through its drafting unit, the Section compiles and constructs 15-minute quadrant maps for southwestern Ontario showing all oil and gas wells and regulation spacing areas. The maps are updated weekly and made available to the public.

The geological well samples are washed, bottled and stored in the repository facilities located in London. Here they are made available to geologists and engineers from industry and universities for research studies.

Under the authority of The Mining Act and Ontario Regulation 546/71, The Section regulates the disposition of mineral rights within Lake Erie. To the end of 1975 the Section had issued 2,523,609 acres under Licence of Occupation and 277,286 acres under production leases to a total of seven operators.

During 1975 a total of 162 wells were drilled in Ontario, including 66 wells in Lake Erie. Off-shore operations are closely scrutinized by the resource officer staff normally operating on a 24-hour basis and staying aboard the drilling vessel during critical phases of the operation.

Since 1858 more than 100,000 oil and gas wells have been drilled in Ontario, and many have never been properly plugged. As a result the Section, through Government funding, administers the plugging of hazardous wells on a priority basis, and in turn works closely with T.E.I.G.A. and other agencies in this regard.

Mineral Economics Section

The Section has been established with elements of the former Commodity Analysis Section. Its responsibilities are as follows:

1. Economic and statistical research as an input to the development of mineral policy options;
2. Development and maintenance of an economic and mineral commodity data base;
3. Annual survey and preparation of annual reports on
   (a) Mineral Industry Statistics, and
   (b) Mining Accident Statistics and Employment;
4. Collection and analysis of national and international data on all metals and minerals commodities, prices, markets, consumption trends tariffs, duties and export-import restrictions;
5. Studies on economic impact of mineral policies in other provinces;
6. Consulting services in field of mineral statistics to other branches of the Ministry, other Ministries and the interested public, and
7. Administration of Part X – Refinery Provisions of The Mining Act.

In 1975-6, preparatory work was undertaken on the publication of the report on Ontario's Mineral Industry Statistics for 1971-1973. The information and the statistical data previously published in these reports have been made available to the interested public on an open file. By the end of the year the open data file on mineral industry operations was completed for the years 1973 and 1974 and the statistical data on mineral production of Ontario were tabulated for 1972 and 1973.

The Section is responsible for preparation of an annual bulletin on mining accident statistics and employment.

In addition to the statistical breakdown of data by major economic areas, Northwestern, Northeastern and Southern Ontario, as well as by major mining centres, the Section also tabulated in 1975 the values of mineral output

for each of the newly established Natural Resource regions.

The Section provided services in the field of mineral statistics to the staff of the Ministry of Natural Resources, other government agencies and the interested public.

Economic and statistical research on mineral resources was reoriented from pure research and assembly to applied research, targeted to output requirements.

Mineral Research Branch

The function of the Branch is to provide scientific support and technical services for Division of Mines programs. The services include direct assistance to the private sector as well as in-house activities.

The Toronto and Cobalt laboratories avoid competition with private laboratories. Fees are charged for outside work. The coupon system for free work to prospectors came under scrutiny during the year.

Toronto Laboratory

Analytical Section

This Section is equipped with sophisticated equipment for the inorganic analysis of geological materials. Automatic x-ray spectographic equipment was installed and put into operation during the year. This upgrading of facilities was in response to the increasing importance of petrochemistry in geological mapping.

Analytical work is a major component of the Division geochemical program and therefore accounts for a large proportion of the activity of the Section. Development work and methods research is necessary to meet program needs. This centered primarily on the determination of tellurium and tin by hybride generation.

Participation in standard reference material analysis was continued in co-operation with CANMET, Ministry of the Environment, and the Canada Centre for Inland Waters.

Mineral Sciences Section

A similar role is played by this Section with respect to mineralogy, petrology and physical testing. Examinations, consultations, and projects for the public were significant. The Section contributes in various ways to the rock analysis program, mainly through the maintenance of the rock and thin section library of the Division and the development and implementation of a computerized norm program for all analyzed samples. This is useful to geologists for the interpretation of data.

Highlights for the year were a study of Ontario peat, and special studies of alkaline rocks, carbonatites and marbles.

In support of the respiratory dust program of Mines Engineering Branch to monitor quartz dust by means of personal gravimetric samplers, an automated and computerized facility was set up to analyze dust collected by the Government and by the mines. Equipment was on hand and the program under way by the end of the period.

Cobalt Laboratory

Temiskaming Testing Laboratory

The primary functions of the Laboratory are the bulk sampling of silver-cobalt ores and concentrates and the determination of silver, cobalt, nickel and copper so that the market value of mine shipments can be established. While silver ores are given priority, the mill is available for the processing of other rocks, ores, and concentrates.

During the year, services to industry were expanded by undertaking to car sample low-grade concentrated in addition to the usual machine sampling of high-grade. In the area the new C.S. & R. treatment plant came on stream but strikes and other difficulties resulted in low production from area mines and low throughout at T.T.L.

Mines Engineering Branch

The function of the Branch is primarily the administration of Part IX of The Mining Act and other codes and regulations dealing with the health and safety of workers in the mining industry.

During the past year, 30 engineers on field staff examined all operations in 107 mines and 1,700 pits. They investigated accidents, fires, unusual occurrences and numerous union complaints. Their routine inspections included the examination of engineering design in underground and surface plants.

The work force of 48,636 suffered 15 accidental deaths in 1975, giving a rate of 0.18 deaths per million work hours. The compensable accident frequency rose slightly to 54 per million work hours.

The Ontario Government Cable Testing Laboratory, located in the basement of the Whitney Block, completed 1,013 tests in 1975. All wire rope used in hoisting installations is required by statute to be tested before use and at intervals during service. Component materials are tested for strength and each cable is given a breaking test up to 600,000 pounds in tension.

Three research programs were in progress during the year.

In partnership with the Ontario Mining Association, the Branch continued development of an electronic device to locate broken wires in hoisting ropes. The device is now available.

At the Haileybury School of Mines, the Branch investigated the parameters involved in the operation of safety devices on mine shaft conveyances as well as the safety of deceleration rates where personnel are involved.

The Branch co-operated with the mining industry in developing braking and steering systems for vehicles and the use of fire suppression systems on rubber-tired, diesel-driven underground vehicles.

Seven fully equippped mine rescue stations and 17 sub-stations, complete with oxygen-breathing apparatus and supplies for emergency use, are maintained in Ontario.

Mine rescue training includes basic and advanced courses and regular training of more than 1,100 mine employees and supervisors. They are trained in all phases of mine rescue work one full day every two months.

A new Ventilation Section was established in May, 1975, under a chief engineer. It was located in Sudbury and transferred to Northeastern Region for administrative purposes.

Division of Fish and Wildlife

Sport Fisheries Branch

The objective of the Branch is to maintain and enhance the fish populations of Ontario as a stable base upon which to provide continuing recreational and economic benefits to the people of Ontario.

During recent decades, some of our waters have lost production potential and some fish populations have lost stability. The general stresses which act on fish populations include excessive exploitation, excessive degradation of water quality by nutrients and/or contaminants, and the side effects of newly introduced or invading species such as smelt and sea lampreys.

Recovery of the former fish production potential of Ontario waters requires a more intensive degree of fisheries management effort throughout the Province. This includes continuing international participation in the program of the Great Lakes Fishery Commission and an increased fisheries role in water-quality management programs co-ordinated by the International Joint Commission.

A joint federal-provincial team concluded over two years of work by recommending a series of strategies to achieve effective managment of Ontario fisheries. These strategies will be discussed with our field staff and advisory groups before final recommendations are made for policies and programs.

Fish Culture

Approximately 6.4 million fish and nine million eggs were stocked in Ontario during 1975. Of these, 24 per cent of the fish and eight per cent of the eggs were released into the Great Lakes and their tributaries. The balance was stocked in numerous inland waters.

Roughly 72 per cent of the fish stocked were salmonids – brook trout (24%), lake trout (20%), rainbow trout (16%), splake (9%), and coho (3%). The remaining 28 per cent were comprised of maskinonge (18%), yellow pickerel (5%), largemouth bass (3%), and smallmouth bass (2%).

Development of the fish culture data base is continuing. When fully operational, the system will facilitate the optimization of various aspects of the fish culture program.

Plans for the construction of the proposed new Lennox fish hatchery in southeastern Ontario and for the reconstruction of the Dorion hatchery main station in northwestern Ontario were deferred because of Provincial monetary constraints. However, construction of the Dorion Hatchery sub-station was initiated and this facility is expected to be completed during the next fiscal year.

A Ministry agreement with the University of Guelph permitted the continuation of disease diagnostic services and fish nutrition studies. Improved diet formulations were developed and tested with favorable results.

Population Dynamics

An integral responsibility of the Population Dynamics Section is to provide advice and consulting services to field staff involved in fisheries projects and particularly those pertaining to salmonid communities. Participation in the Lake Huron and Lake Superior management committees is also an important function of the Section.

Work on the development of the harvest component of the Ontario Fisheries Information System continued.

The co-ordination role was continued for Ontario contributors to an International Percid Symposium (PERCIS) to be held in Ontario in the fall of 1976. Co-authorship of a paper for PERCIS on percid yields in northern Ontario lakes was undertaken.

The geographical atlas of lake trout waters was under revision preparatory to entry on cassette tape in late 1976. A factor analysis to determine important parameters for the classification of lake trout lakes was completed. The initial model showed gaps in information but also promise for future development.

A co-operative project with Fish and Wildlife Research Branch resulted in completion of a manuscript on the distribution and characteristics of lake trout waters in Ontario. This paper should be available in late 1976.

Fish Habitat (Environmental) Dynamics

Ontario waters experience seasonal changes which are normal for them and the associated aquatic life. These changes are dynamic. On the other hand, modern society's activities cause additional changes to fish habitat, many of which are detrimental and reduce the ability of the habitat to produce fish. Considerable effort is needed to avoid or minimize detrimental changes and recoup habitat of low quality.

Studies continue with the Ministry of Transportation and Communications on the impact of the Hanlon Expressway (Hwy. 6) on a brook trout stream.

The co-operative study at Nanticoke is a special arrangement between Ontario Hydro, Stelco, Texaco and the Ministries of the Environment and Natural Resources. This study, to judge the impact of industrialization on that part of Lake Erie adjacent to Nanticoke, will soon be entering its sixth year.

The pilot study continued on Wilmot Creek to reclaim degraded fish habitat. Bank stabilization, fencing, and other in-stream works have been engineered to improve the ability of this former Atlantic salmon stream to produce trout. The results of the reclamation project will be applied to other streams in Ontario.

The booklet, "Better Streams for More Trout", was published this year.

In-stream dams continue to limit the production of natural salmonid populations. Fishways on the Saugeen and Ganaraska Rivers passed more than 3,500 rainbow trout and numerous brown trout, a significant increase over previous years, particularly on the Ganaraska.

Wherever possible, natural reproduction will be encouraged and assisted instead of using hatchery-reared fish. In this regard, work is under way to build a fishway on the Lucknow River at Port Albert.

Some dams have been washed away by floods and new habitat for spawning trout and salmonids has resulted.

We are considering the benefits of trucking mature fish above barriers on streams where fishways are not practical.

In the continuing Inventory Program for lakes and streams, 580 lakes (550,000 acres) and 1,450 miles of

stream were examined in 1975; 514 fishing maps have been prepared for public use and another 40 are in preparation.

Some populations of fish in certain waters of Ontario are contaminated with mercury and PCBs. We are co-operating with the Ministry of the Environment to prepare and implement the first year of a discovery program to ascertain the existing and relative importance of the environmental contaminant problem in Ontario aquatic environments and fish.

Planning

Planning Section provides fisheries input for Ministry strategic land use plans, municipal plans, lakeshore development studies, and other planning activities within and outside the Ministry of Natural Resources. This work is essential to ensure that fisheries concerns receive adequate consideration in the planning process.

The "Trout and Salmon Migratory Routes Map" for northern Ontario was produced and is now available to the public.

Work is continuing on developing refined methods for calculating potential fish yields from lakes – information which is essential in managing our lakes.

An angler survey was conducted by means of a questionnaire mailed to a selected representative sample of 1975 non-resident angling licence holders and a random sample of Ontario households. An estimated 2,500 non-resident anglers and 6,000 Ontario residents were contacted.

The questionnaires solicited information on the amount and location of sport fishing in Ontario, user characteristics, angler preferences, expenditures related to sport fishing, and limited harvest information. Results of the survey are now being analyzed and will be published.

Sport Fisheries Branch has been designated as the provincial liaison agency in dealing with the federal government for small craft harbour development. To facilitate this work, an Inter-Ministerial Committee on Great Lakes Access has been formed.

Planning Section this year was given the responsibility of administering the Boating Restriction Regulations, under the Canada Shipping Act, for the Province. This is a federal responsibility delegated to the Province in 1972.

Fisheries Services

Sales of non-resident angling licences remained fairly constant and exhibited minor fluctuations only. Seasonal licence sales decreased by 3.1 per cent while sales of three-day licences increased 2.8 per cent. Organized camp licences decreased slightly from 5,969 to 5,810.

The Canadian resident licence continued to be popular and increased from 21,807 to 22,637. The non-resident smelt licence, which includes bow-and-arrow fishing for carp, also increased in popularity and sales rose from 7,337 in 1974 to 8,735 in 1975.

Development of the Ontario Fisheries Information System continued this year with the initiation of three new data bases. The system was developed to integrate many types of data from different sources into one data base. It is intended for use when a particular fishery is being studied or assessed in detail over a considerable period of time.

The Lake Inventory data base was designed for the storage and retrieval of lake survey data collected from inland lakes.

The Commercial Fish data base, consisting of licence, harvest and capital investment information for fishermen holding commercial fishing licences, was also introduced.

The Hatchery Production and Costing data base continued in the development phase and the Creel Survey data base moved into the production phase.

Wildlife Branch

The Branch objective is to manage, enhance and interpret wildlife populations and habitats to provide optimum wildlife-based recreation opportunities for the residents of Ontario and a continuous contribution to tourism and its related industries. Much effort is directed to the maintenance and improvement of wildlife habitat as it is habitat which determines the potential in wildlife numbers.

Big Game Management

The moose population remains relatively stable. The rate of decline of the moose herd in accessible areas appears to be slowing. Moose populations in areas not easily accessible to hunters appear to be holding steady. Working with local populations of animals is important in implementing a sound provincial moose management program.

A Moose Council has been established to co-ordinate the program. It is comprised of the provincial moose biologist (chairman), provincial habitat ecologist, moose research biologist, the regional moose biologists from each of the four northern regions, and the regional wildlife biologist from Algonquin Region. The Council meets on a regular basis.

The new moose management program is described by seven management items as follows: (1) wildlife management unit data-book; (2) moose population inventory; (3) moose habitat inventory; (4) moose harvest assessment; (5) moose habitat management; (6) moose co-operative research project; and (7) provincial moose management demonstration area. Standards and guidelines for each management item are being developed by the Moose Council.

A system of wildlife Management Units has been developed for northern Ontario. Unit boundaries are described by lakes, rivers, roads and other features which make them easy to recognize on the ground. The Units will serve as a basis for formulating moose hunting regulations and assessing moose populations, habitat and the annual harvest.

The number of deer in the forested areas of the northwest fluctuates with winter condition, and in the forested areas south of the French and Mattawa Rivers it declines with decreasing habitat quality. In the agricultural south, the number of deer is holding or increasing. Habitat management is required for an abundance of deer. It is concentrated on increasing the winter food supply by cutting hardwood near conifer cover.

Black bear numbers, though difficult to assess, are believed to be holding constant. Nuisance bear are trapped and released elsewhere whenever possible, or destroyed if necessary. Hunters take 6,000 to 9,000 bears per year, and the number of bear hunters is still increasing.

Timber wolf and coyote populations remained relatively stable during the past year. Occurrences of predation on domestic stock, by coyotes primarily, were reported to be slightly higher than in 1974.

During 1975, the predator control program resulted in the removal of 178 wolves and coyotes and 15 black bears from areas where producers were losing livestock to these predators.

Waterfowl Management

A program to establish a wild breeding population of Canada geese in southern Ontario, under way since 1968, has been entirely successful, and it is estimated that 10,000 of these birds now occur in that part of the province as breeders or potential breeders. Snow goose breeding success in the Northwest Territories was very poor in 1976 due to persistent snow cover during the nesting season. Breeding success of ducks was generally good and fall populations of these birds in Ontario is about average.

Upland Game Management

Ruffed grouse appear to be maintaining a slow increase in numbers. Hungarian partridge numbers in eastern Ontario have remained stable or perhaps increased slightly. European hare also appear to have increased in numbers. Most other small game species, with the possible exceptions of squirrels and raccoons in certain localities, appear to be maintaining relatively stable populations.

Non-Game Management

This program encompasses endangered and threatened species, urban wildlife, non-game wildlife, and wildlife interpretation outside of provincial parks.

Efforts with endangered species over the past year were primarily devoted to the documentation of evidence on the population status of certain species.

Several field programs, undertaken during the year, included studies on the blue racer snake. The white pelican studies continued in the Lake of the Woods.

A policy paper on endangered and threatened species was under development.

Wildlife Branch staff participated in the planning of the central waterfront area of the City of Toronto. This area contains some of the finest wildlife resources in the region.

A symposium was co-sponsored with the University of Guelph on Wildlife in Urban Canada. Wildlife Branch staff played a leading role in the development of the symposium.

Wildlife interpretation weekends were held at Long Point, Luther Marsh, and Hawk Cliff near St. Thomas. These programs have proven to be highly popular with the public.

Wildlife Extension and Provincial Wildlife Areas

Forty areas are located throughout southern Ontario to provide wildlife-based recreation on private and public land. Habitat is managed to produce wildlife for viewing, hunting and maintenance of wildlife populations. Interpretive displays and trails are provided in many of the areas.

Field Services

Conservation Officers of this Ministry are responsible for the enforcement of laws and regulations pertaining to fish and wildlife. The laws include The Game and Fish Act, The Endangered Species Act, The Fisheries Act, and The Migratory Birds Convention Act. Convictions for violations totalled 6,988 during the year.

Planning

Many kinds of plans, including recreational, forestry, mining, housing, and municipal development plans, have been reviewed to ensure that wildlife interests are an integral part of planning considerations.

Environmental impact assessments from many sectors are increasing in number and have been carefully scrutinized with regard to wildlife interests.

Projects for 1976 consisted of development of a proposed master planning process for wildlife management areas, assembly of a bibliography of effects of development on wetlands, and determination of effects of development on wildlife resources in southern Ontario.

Wildlife Surveys and Records

This office, formerly called the Central Licence Bureau, files hunting and non-resident angling licences. Statistics on participation in hunting, including participation rates, hunter success and harvest, and socio-economic characteristics of participants, are obtained through mailed questionnaires. This information supplements data obtained in the field and forms the basis for wildlife management and recreation planning.

Commercial Fish and Fur Branch

The objective of the Branch is to manage fish, fur, wild rice and similar resources for commercial purposes.

The Freshwater Fish Industry

Landings of most species remained comparable to previous years. However, yellow perch landings in Lake Erie declined, 25 per cent from 1974 as a result of reduced resource supply, and sales for animal food declined to near normal levels at 2.4 million pounds. In all, landings declined to 45.5 million pounds from 53.2 in 1974 while strengthening prices raised ex-vessel value to $11.1 million from $9.7 million in 1974. Bait-fish landings were fairly constant from 1974. Employment in both fisheries was about 5,500 persons. Some major activities during the year were as follows.

The Freight Equalization Assistance Program continued to assist fishermen in the remote fisheries in meetihigh freight costs, and stimulated the harvest of unused species in the more accessible areas of northwestern Ontario.

Pair-trawling and pair-seining experiments were continued in Lake Nipissing to further refine techniques for selectively harvesting ciscoe and other under-used species in this lake.

Exploratory gill-netting was conducted in eastern Lake Superior to extend commercial chub fisheries in the area.

Experiments to develop effective impounding gear and techniques for use in confined waters were conducted in eastern Lake Superior and several lakes in northwestern Ontario.

Further assistance was provided to develop domestic markets for smoked and filleted mullet.

Extension activities to up-grade the bait-fish industry were continued in several parts of the Province. Refrigerated holding and handling equipment was demonstrated in the North Central Region.

The eel-ladder, installed at the Robert H. Saunders Generating Station in 1974, was operated successfully again in 1975. Nearly a million eels were assisted over the dam into Lake Ontario.

The Wild Fur Industry

During the 1974-5 trapping season, the harvest of beaver by Ontario trappers declined to 156,105 pelts and the average pelt price fell to $17.96. Adverse climatic conditions, affecting bush travel, were thought responsible for the decline, together with drought conditions in sections of northern Ontario.

An all-time record of 47,560 raccoons was harvested, primarily in southern Ontario.

The harvest of all other important fur-bearers was lower than during the previous year. The harvest of lynx continued to decline as predicted, due to the cyclic nature of the species.

The trapper education programs continued to be upgraded across the Province, and the response from trappers was again very favorable. Efficiency, humane trapping and good management practices continued to be stressed. In many workshops, trappers participated in the skinning and trap-setting demonstrations under the supervision of a demonstrator.

Ontario submitted two traps to the Federal Provincial Committee for Humane Trapping and also provided staff and financial support to the Committee.

Ontario Wild Furs in year ending June 30, 1975

PELTS	*HARVESTED		EXPORTED OR TANNED	
	Number	Av. Value	Number	Total Value
Beaver	156,105	$ 17.96	159,984	$2,873,312.64
Bobcat	25	50.87	29	1,475.23
Fisher	2,790	60.25	2,820	169,905.00
Arctic Fox	127	30.50	152	4,636.00
Colored Fox	11,809	31.41	14,183	445,488.00
Lynx	1,918	127.17	1,954	248,490.18
Marten	18,006	7.92	18,463	146,226.96
Mink	17,194	8.46	17,512	148,151.52
Muskrat	487,238	3.16	479,671	1,515,760.36
Otter	7,507	46.81	7,757	363,105.17
Raccoon	47,560	12.14	71,172	864,028.08
Skunk	171	1.77	212	375.24
Wolverine	1	93.11	3	279.33
Squirrel	6,076	0.42	.....	.....
Weasel	4,689	0.49	.....	.....
Timber Wolf	741	28.16	.....	.....
Coyote	1,319	16.70	.....	.....
Black Bear	288	33.46	.....	.....
Polar Bear	15	276.52	.....	.....
Totals	763,579	.....	773,912	6,781,233.74

*Total value: $6,410,166.

Resource Development (Native People)

Under a Federal-Provincial Resource Development Agreement, which commenced in 1962, a number of programs were instituted to assist native people in various fields relating to renewable natural resourced. The following projects were carried out during the past fiscal year.

Fur. Aerial surveys of trapline areas assisted in locating trappers and their families on vacant traplines in highly productive areas in the Northern and North Central Regions. Trapper development programs which promoted the care and handling of pelts, as well as aspects of humane trapping techniques and sound management practices, were conducted in a number of Indian communities.

Commercial Fish. Nets and equipment were provided to various Indian bands in the Sioux Lookout and Geraldton areas. The unusually long fire season reduced fisheries production as a large number of fishermen were involved in fire suppression activities.

Tourism. The Indian bands were assisted in the operation of six goose camps on the coasts of Hudson and James Bays. The objective of this program is to assist native people to become self-sufficient in the management of these camps. This became a reality when the Tidewater Goose Camp was turned over the James Rickard of Mosse Factory.

Hide Collection. Moose and deer hides were collected throughout the Province and distributed at cost to various Indian communities where they are used in the manufacture of clothing an; handicrafts. Increased advertising led to a 70 per cent increase in the number of hides collected. It was anticipated that hunters would turn in about 10,000 hides in the 1976 season.

Timber. Technical advice was provided on logging, lumbering and reforestation projects. Assistance was given to Indian bands in the management of reserve forests and plantation improvements.

Planning. Indians attended meetings and took an active part in planning various resource-related projects. Indian representatives on the Resource Development Committee assist in determining the programs considered most beneficial to their needs.

Fish and Wildlife Research Branch

The objective of the Branch is to undertake or arrange investigative research which will provide the understanding of basic principles related to fish and wildlife resources needed for their optimum management.

In pursuit of this objective, the Branch not only carries out relevant high-quality research and publishes its results in open scientific literature but makes its specialized expertise available to all levels of the Ministry to assist policy formulation, program design and the analysis and evaluation of results.

Much of our fisheries research is aimed at improved prediction of the impact of man's growing use of our waters and their fish communities. Such predictive capability is essential if wise choices are to be made between alternative management options.

This past year the Branch contributed significantly to the Great Lakes Fishery Commission's analyses which led to the liberalization of walleye quotas and to new yellow perch mesh-size regulations on Lake Erie. Both measures should lead to more stable and productive fisheries.

In another area we have been especially active in examining the effects of community development on the fisheries of our lakes to obtain precise information about the angling pressures generated by various degrees of development. This work contributes directly and importantly to a major, inter-disciplinary study of the whole problem of controlling shoreline development which has been co-operatively mounted by this Ministry and those of Environment and Housing.

Research on the physiology and genetics of reproduction, growth, longevity and survival of fish species of importance to Ontario fisheries is conducted under laboratory and field conditions.

During the past year, emphasis was placed on development of a new strain of trout between the highly selected fifth-generation splake and lake trout. Field tests on this strain have shown evidence of improved survival and longevity without loss of the rapid-growth characteristics of the highly selected splake.

In collecting the necessary data to pursue various studies, our fisheries scientists obtain much information of immediate use to management staff in areas where they work and have continued to serve as resource persons on local management committees. They also serve as technical representatives of the Ministry on inter-ministerial and federal-provincial committees as well as those of the International Joint Commission for Boundary Waters and the Great Lakes Fishery Commission.

Wildlife research in Ontario seeks to fill our knowledge gaps by investigation of behaviour, physiology, reproduction, pathology, population dynamics, and interactions between wildlife and habitat for selected species.

Progress continued toward optimization of a baiting strategy capable of delivering an oral rabies vaccine to the major wild carnivore vectors of the disease. This program is far in advance of comparable efforts around the world.

Black bear studies continued to provide important insight into fluctuations in human-bear problems. Studies continued on a bear parasite which has caused concern among hunters.

Pathological research included the analysis of material collected by Dr. Audrey Fyvie before her death, while laying the groundwork for experimental studies of the influence of diseases on population dynamics.

Continued development of a radio-tracking system bore valuable fruit, but full utilization of this tool is hampered by lack of the automated receiving equipment available through modern technology.

Division of Parks

Park Management Branch

The Branch is responsible for the development and operation of provincial parks and other recreation areas, and for their structural and facilitity design, concessions, interpretive facilities, and management control, and for the information of the public.

The number of campers using Ontario Provincial Parks increased in 1975 to 1,621,887, a new record, while total visitation increased slightly to 11,139,864 from 11,031,651 in 1974.

In southern Ontario, many families had to be turned away on busy weekends despite the addition of new campsites to the system. July-August percentage occupancy increased to 66 for the 20,332 campsites available, up from 62 the year before.

The number of parks in operation increased from 117 to 121 with the opening of four new parks as follows:

Bronte Creek, a 1,700-acre day-use recreational park, north of the Queen Elizabeth Way and midway between Toronto and Hamilton;

Quimet Canyon, a 1,920-acre nature reserve park 35 miles east of Thunder Bay and five miles north of Highway 17;

Cavern Lake, a 467-acre nature reserve park, 30 miles east of Thunder Bay; and

Silent Lake, a 1,860-acre natural environment park with 150 campsites 15 miles south of Bancroft on Highway 28.

Many existing park facilities were upgraded with improvements to water, sewage and electrical systems.

Visitor Services — Interpretive Program

During the year, more than 1.4 million park visitors attended exhibits, conducted trips, self guiding trails, lectures, and organized group recreation activities to learn more about Ontario and its parks, environment, resource management and history.

A Waterfowl Viewing weekend was held at Long Point Provincial Park in co-operation with naturalist organizations, and over 6,000 visitors attended.

The number of parks offering interpretation programs continued to expand, and several new audio-visual programs were produced.

Winter Parks

During the winter of 1975-6, four parks were operated on a winter basis: Arrowhead, near Huntsville; Sibbald Point, on Lake Simcoe; Pinery, on Lake Huron; and Rondeau, on Lake Erie. Winter facilities included snow-plowed roads and campsites, heated washrooms with hot water, central drinking water, fuelwood supply, garbage disposal, and electrical outlets. Regular fees were charged.

Ski-tows were operated at Pinery and Remi Lake Provincial Parks. Many other parks were used informally for activities such as snowshoeing, cross-country skiing and tobogganning.

Snowmobile Trails

Snowmobiling was permitted in provincial parks on approximately 200 miles of marked trails and 700 miles of park roads during the winter of 1975-6. More than 600 miles of cross-country snowmobile trails were operated on public lands in the province.

A special one-season winter trail maintenance program, funded to $500,000, was instituted to assist snowmobile clubs, cross-country ski clubs, municipalities and conservation authorities to improve the grooming of 7,000 miles of trail across the Province.

Access Points

During the year, close to 1,400 access points with parking areas and boat launch ramps were maintained to provide boaters with access to lakes and rivers.

Canoe Routes

In 1975, nearly 100,000 persons entered Algonquin and Quetico Provincial Parks for interior canoe camping.

A booklet, Northern Ontario Canoe Routes, summarizes 125 routes that represent 11,000 miles of canoeing waterways.

Camp Algonquin

A special camp for disadvantaged boys and girls, 12 to 16 years of age, established at Algonquin Provincial Park in July, 1974, operated for four two-week periods in July and August, 1975. The camp accommodated 180 children. Facilities were installed by the Ministry of Natural Resources and the program was operated by the Camping Division of the Metro-Toronto Y.M.C.A.

Park Planning Branch

The Branch objective is to develop and co-ordinate long-range, master and environmental plans for the provincial park and public lands recreation system; to provide related planning advice and assistance to other agencies and the private sector; and to provide field design services in landscape architecture and architecture.

Recreational Land Acquisitions

Work continued on the evaluation of future parkland with emphasis on increased recreational facilities for southern Ontario residents. During the year, 4,764 acres were acquiried for parks purposes.

As part of the implementation of the Niagara Escarpment Report, 3,183 acres were purchased, making a total of 40,442 acres acquiried to date. An additional 53 acres of land were purchased at Wasaga Beach.

Park Advisory Committee

Policy recommendations by the Rondeau Provincial Park Advisory Committee were accepted in the main by the Minister in March, 1976.

Provincial Parks Council

The Ontario Provincial Parks Council, under the chairmanship of Dr. George Priddle, University of Waterloo, was appointed in October, 1974. Comprising 19 members representing a wide array of recreational backgrounds, the Council's mandate includes monitoring the implementation of the Algonquin Park Master Plan and advising the Minister with respect to the planning, management and development of the Provincial Parks system in relation to changing public needs.

In its First Annual Report to the Minister, the Council made recommendations on a wide variety of topics related to Provincial Parks.

Ontario Trails Council

The Ontario Trails Council, under the Chairmanship of Mr. William E. Coates, was activated in September, 1975. The 17-member citizens' group has been given the mandate to prepare policy recommendations on the implementation of a provincial Trails Program.

The Council is holding public meetings across the Province to hear the concerns of interested snowmobilers, horseback riders, cross-country skiers, trail bike riders, bicyclists, snowshoers and canoeists. The Council will present its final recommendations to the Minister in September, 1977.

Master Planning

The Provincial Park Master Planning Program continued to expand this year with the scheduled completion and publication of master plans for Short Hills, Frontenac, Point Farms, Charleston Lake, Carillon, Sibley, Quetico, MacGregor Point, Boyne Valley, Peter's Woods, Killbear, Neys and Kakabeka Falls by March, 1977.

Work continued on finalizing plans for Rondeau, Turkey Point, Methodist Point, Lake Scugog, Rock Point, Murphy's Point and several other park projects.

Public discussions were held on several park planning projects to permit active public involvement in the establishment of future policies and developments.

Provincial Park Policy Statement

A detailed policy statement designed to direct future growth and development of the Provincial Park System is in preparation at this time.

Park User Survey

The park user survey program, initiated in 1974, continued during the 1975 season with surveys of visitors in 18 parks.

The purpose of the program is to provide information vital to the planning and management of the parks. Designated parks will be surveyed on a cyclical basis, once in five years, each year of the cycle involving a different group of parks.

Park Classification

Work was initiated on revisions to the park classification system in use since 1967. The proposed revisions introduce certain new class designations and will provide more detailed policies for the planning, development and management of existing and future provincial parks.

Wildnerness Areas

Investigations were undertaken to define the elements of a system of wilderness areas for the Province and to identify candidate areas.

Nature Reserves

A new planning-measurement system for nature reserves is under development to facilitate the identification of potential nature reserves and the evaluation of existing reserves.

Conservation Authorities Branch

The Branch supports programs that are initiated and undertaken for the most part by autonomous, corporate bodies established as Conservation Authorities under The Conservation Authorities Act.

The Act enables a Conservation Authority to establish and undertake a wide variety of programs to further the conservation, restoration, development and management of the renewable, natural resources within its watershed.

The Branch objective is to encourage the conservation, development and utilization of water and related land resources by providing funding assistance and policy, planning, management and planning direction to the Authorities.

The 38 Authorities cover most of southern Ontario and areas around the northern centres of Thunder Bay, Sault Ste. Marie, Timmins, Sudbury and North Bay.

A Conservation Authority is formed as a result of a resolution from two or more municipal councils petitioning the Minister of Natural Resources to convene a meeting for that purpose. If the municipal vote is favorable, the Authority is established by Order-in-Council. The boundaries of an Authority are defined by the Minister on a watershed basis.

Authority membership includes representatives of all municipalities situated wholly or partially within the watershed. The Province may appoint up to three members to each Authority.

As a result of this provincial-municipal arrangement, the initiative and sense of responsibility of the local community are expressed through a watershed organization backed with the technical and financial assistance of the Province.

Conservation Authorities place a particular emphasis on water and related land management but they have also developed important programs oriented to land use, forestry, fish and wildlife, outdoor recreation and conservation education.

Each project undertaken by an Authority must have the approval of the Minister of Natural Resources. Financial assistance is provided through Conservation Authorities Branch for a wide variety of resource management projects.

Provincial grants generally amount to 50 per cent of the cost of an approved project but higher rates are applied for certain types of projects. The Authority raises its share of the project funding through levying its member municipalities or from other sources.

Ten Authorities employ a general manager or director of operations to supervise programs under the direction of the chairman. Twenty Authorities have the services of resource managers supplied by the Province and in four

instances the services of a manager are shared by two Authorities. Technical, clerical and operational staff are hired by the Authority.

Conservation Authorities relate to the Ministry's field organization at the regional level. Four regions have program supervisors to assist the Authorities in planning and implementing their resource management programs.

Grants to Authorities, 1975-6

Under the Conservation Authorities Act

Ausable-Bayfield CA	$ 264,074.00
Cataragui Region CA	1,270,653.23
Catfish Creek CA	57,305.21
Central Lake Ontario CA	436,881.37
Credit Valley CA	2,100,231.94
Crowe Valley	96,550.61
Essex Region CA	388,586.83
Ganaraska Region CA	248,650.98
Grand River CA	8,201,721.07
Halton Region CA	2,131,840.97
Hamilton Region CA	1,299,343.07
Kettle Creek CA	133,835.44
Lakehead Region CA	250,380.80
Long Point Region CA	350,402.75
Lower Thames Valley CA	636,720.94
Lower Trent Region CA	134,468.72
Maitland Valley CA	232,161.68
Mattagami Valley CA	422,166.74
Metropolitan Toronto and Region CA	4,414,141.28
Mississippi Valley CA	160,958.99
Moira River CA	1,119,496.69
Napanee Region CA	442,513.01
Niagara Peninsula CA	537,756.14
Nickel District CA	266,411.11
North Bay-Mattawa CA	87,803.38
North Grey Region CA	1,202,453.59
Nottawasaga Valley CA	395,480.77
Otonabee Region CA	247,421.56
Prince Edward Region CA	222,343.99
Raisin Region CA	140,185.91
Rideau Valley CA	618,833.35
Sauble Valley CA	216,284.23
Saugeen Valley CA	469,573.12
Sault Ste. Marie Region CA	545,883.46
South Lake Simcoe CA	314,955.17
South Nation River CA	278,495.36
St. Clair Region CA	491,951.32
Upper Thames River CA	569,999.87
Total	$31,399,735.75

Under "Experience '75"

Grants to Authorities	$ 1,873,287.00

Under The Parks Assistance Act

Grants to Municipalities	$ 496,462.00

Division of Lands

Lands Administration Branch

The Branch is responsible for the administration of Crown lands (both public and mining lands) in Ontario, and for the acquisition of private lands needed for Ministry programs.

Land Acquisition Section

The Section is responsible for purchasing private lands required for programs such as public recreation and wildlife management. It provides assistance in setting acquisition priorities, oversees and approves each purchase, and maintains a computerized inventory of all property acquired. A management service is provided for newly acquired lands to assure optimum benefits until they are incorporated into Ministry programs. More than 600,000 acres have been purchased since the Section's formation in 1962 – 5,200 acres in the past year. Again this year, emphasis was placed on consolidating holdings to allow development of properties.

Titles Section

This Section prepares the title documents required to dispose of Crown lands under The Public Lands Act and The Mining Act, and maintains a written registry of Crown Lands. It levies mining acreage tax and carries out procedures necessary to effect forfeiture to the Crown of alienated mining lands when the owners default.

Mining Lands Section

Under The Mining Act, this Section is authorized to manage Crown mining lands as follows:

(a) Ruling on mining leases and exploratory licences of occupation (the latter for large tracts of land where normal claim staking is not feasible);

(b) Issuing permits for sand and gravel removal;

(c) Setting policy, formulating and interpreting Statutes;

(d) Auditing mining claims recorded in regional offices;

(e) Auditing quarry permits issued in regional offices;

(f) Assessing all geophysical, geological and other technical survey reports; and

(g) Withdrawing Crown lands from any form of disposition.

This Section also licenses the removal of sand or gravel from beaches, banks or waters of all lakes and streams and regularly monitors such operations. Licences cover private removal as well as large commercial extractions which provide considerable revenue in the form of royalties. Liaison with the Ministry of the Environment and MNR field staff specialists ensures that significant ecological damage is prevented. Municipalities, operating for municipal purposes, are exempt from Ministry licensing and supervision.

The program of rehabilitating depleted pits and quarries on Crown lands continued under regional direction.

Public Lands Section

This Section is responsible for the management and disposition of public lands. While its role has historically

focused on disposition transactions, the emphasis is gradually shifting to management of the public domain – some 88 per cent of the Province's area.

Since public lands and waters contribute massively to the needs of growing numbers of outdoor recreationists, land management techniques are being evolved and applied to control uses and users so as to minimize damage to land and water resources and prevent monopolistic uses by some at the expense of others. At the same time, every effort is made to preserve the public's traditional freedom – to transiently use and enjoy the public domain.

Land management extends to privately owned lands when such lands are in areas without municipal organization and designated as Restricted Areas under Section 17 of The Public Lands Act. Within a Restricted Area, development or improvement proposals must comply with development plans and guidelines that have been drawn up by the Ministry of Natural Resources following consultation with other Ministries, agencies, area landowners and residents.

Land disposition may be by sale, lease, easement, licence of occupation, land use permit or, when land is transferred to another agency of government, by vesting order. The Section prescribes the terms and conditions of disposition and is responsible for follow-up monitoring to ensure that conditions are being complied with.

Currently, the most common dispositions are Crown cottage lots for private use which, since 1971, have been by lease only. During their first year on the market, lots in subdivisions may be leased only to Canadian citizens and landed immigrants who are residents of Ontario; during the second year, other Canadians and landed immigrants may apply; and during the third year, non-Canadians may apply. Lots not in subdivisions (remote cottage lots) are only available to Ontario residents.

Land Use Co-Ordination Branch

During 1975 the Branch, comprising the Land Use Planning, Land Use Liaison and Plan Review Sections, continued to co-ordinate Ministry planning, assist other ministries and municipalities with land use plans, and maintain a sensitive-areas recording system. The Branch prepares environmental assessment procedures for Ministry undertakings and co-ordinates Ministry environmental assessment responsibilities.

Strategic Land Use Plan

Since its inception in 1972 the Branch has concentrated much effort on the preparation of the Strategic Land Use Plan. When completed and approved, this will serve as the official co-ordinating guide for all programs of the Ministry that require land.

Aiming at the same goal of a comprehensive, co-ordinated policy, the Land Use Liaison Section held a series of meetings with other branches of Natural Resources and with other ministries to discuss a variety of land-use policies. Both main office and field staff participated in collecting and analysing data necessary to the formulation of policy.

The outcome of this activity was the creation of reports containing background information and approach to policy for the Northwestern, Northeastern and Southern Planning Areas. The Northwestern report, inviting public response, was released last year. Taking public advice into consideration, the revised draft policy was prepared and will be circulated next year. Northeastern and Southern information reports were prepared and are being edited for publication in 1977. All public comment will be taken into account in the finalization of the policy, scheduled for 1977.

The general land-use plan for Lake of the Woods was completed and submitted for Ministry approval.

Assistance to Other Jurisdictions

The Branch worked closely with the Ministry of Transportation and Communications on regional network plans; with the Ministry of Treasury, Economics and Intergovernmental Affairs on its parkway belt and regional development projects; and with Ontario Hydro. It also maintained close co-operation with the Ministries of Environment, Industry and Tourism, and Agriculture and Food.

On other governmental levels, planning assistance was given to such projects as the Central Waterfront Plan under the auspices of Metropolitan Toronto, Design for Development, the Simcoe-Georgian Task Force and the Northumberland Task Force, and to several municipalities preparing official plans, among them the Regional Municipalities of Peel, Durham, Waterloo and Haldimand-Norfolk, the District Municipality of Muskoka, and the City of Timmins.

Lake Planning

This was the second year of the Ministry's new three-year cottaging initiative. The intent of this program is to expand the number of cottage lots provided on Crown land in northern Ontario. Comprehensive lake plans were prepared by field staff following the guidelines in the Branch's Lake Planning Manual. The Manual was again revised on the basis of the experience gained during the previous field season.

Plan Review Activity

A great many development proposals that come from individuals, private concerns, other government agencies and municipalities can have a significant effect on Ministry objectives and programs. It is important to ensure that such proposals are compatible with, and create no serious adverse impact on, MNR's objectives or programs. While the review of proposals is common throughout Ontario, development pressures are most vigorous in the southern regions. In reviewing and commenting on development proposals, the Ministry makes a valuable contribution to the maintenance of a good-quality environment and the continuing productivity of provincial resources.

The number of subdivision, severance, other specific development and official plan proposals reviewed in the 1975-6 fiscal year increased by about 50 per cent over the previous year.

During 1975-6 the total effort of the Ministry was reviewed to determine which activities had sufficient impact on the environment to warrant environmental assessment under The Environmental Assessment Act, 1975. Various methodologies were reviewed and a procedure was developed for the preparation of a "class" environmental assessment.

Surveys and Mapping Branch

The Branch is a service agency whose name accurately describes its duties. It carries out ground and aerial surveys of various types and makes a wide variety of maps for the Ministry, the Government and the public at large. Its director is the Surveyor General of Ontario.

The surveys conducted are of two types; those needed to locate land boundaries or to define ground position for official purposes, and those needed to record the nature of land and assess its future potential.

The Cadastral Surveys Section is responsible for all surveys or re-surveys of township boundaries and all surveys of Crown land prior to its disposition. Much of this work is performed under the direction of the Surveyor General by land surveyors in private practice.

The Control Surveys Section handles the precise fixing of selected ground points needed for mapping control and to support co-ordinate systems associated with surveying, engineering and geographical referencing. A computer program, used in adjusting large networks of survey control, has been completed and is available for use outside the Section. A data bank for the management of control survey information is in the final stages of completion. Control survey agreements were made with the Regional Municipalities of Hamilton-Wentworth and Waterloo for the installation of control surveys.

The Inventory Section uses photo interpretation techniques to furnish data on forest stands throughout Ontario. It sends out field parties to investigate soils and terrain and to evaluate the potential use of land and water for recreation, timber production, wildlife habitat and any hazards to human occupation. The Section, anticipating demands for rapid increases in pulp and paper production, accelerated its forest inventory program and the completion target is now two years ahead of the original schedule. In co-operation with Sport Fisheries Branch, the Section installed and evaluated new water inventory equipment to improve fish productivity within the Province.

The Cartography Section produces and maintains the Province's topographic, territorial and geological map series together with other scientific, recreational or administrative maps for government and public distribution. It also produces a variety of related booklets and brochures. Parallel with this traditional map production activity, a small working laboratory has been staffed to continue an evaluation of computer-assisted map production in co-operation with the Geographical Referencing Section.

The Drafting Services Section provides general drafting and graphics support to this and other ministries lacking their own drafting staff. In particular, it maintains plans recording in visual form a forest inventory, preliminary geological surveys and the status of mining and other public lands.

The Ontario Centre for Remote Sensing is an intra-governmental service organization which analyses aerial photography and satellite imagery for application to the data needs of resource exploitation and management, and conducts research into new applications of remote sensing. It also provides a source of remote sensing information and expertise for the Province as a whole. The Centre has undertaken more than 100 requested projects since commencing operations in 1974.

The Ontario Geographic Names Board is a ministerial agency furnished with its secretariat by Surveys and Mapping Branch. It provides and maintains accurate, official names of geographic features and unincorporated places for use on federal and provincial maps of Ontario and in related documents.

The past year saw publication of *Principles of Geographical Naming* which sets forth Board guidelines and procedures. "Toponymy and the Technological Imperative" appeared in the December issue of *Canoma,* a Federal Government publication.

This year greater stress was placed on the field name survey as a means of updating map nomenclature. Researchers surveyed Manitoulin Island and areas in Sudbury, Espanola, Wawa, Sault Ste. Marie and Parry Sound Districts. Meetings were held in the last two districts.

The Geographical Referencing Section has designed a basic mapping system for the Province. The maps will provide a foundation for the integrated geographical referencing of positionally-related data in Ontario. Investigations are being conducted into automated mapping and information systems. Several thematic mapping applications, using digital technology, are under development.

Field Services Division

Forest Fire Control Branch

At the end of the 1974 fire season in Ontario, a total of 1,625 fires had burned an area which reached a surprising 1,294,800.2 acres. However, the 1975 fire season proved to be the reverse as the total number of fires increased to a high of 3,146 which covered 41,651.5 acres. The number of fires broke a 39-year-old record established in 1936 when 2,264 fires broke out. The 1975 acreage was less than one-thirtieth of the 1974 total. Lightning was responsible for 1,043 fires or 33 per cent of the total. Human error and carelessness caused the balance.

In contrast to the previous year when northwestern Ontario was hardest hit, the Province's Northern and Northeastern Regions were the major hotspots in 1975. In the Northeastern Region, 1,026 fires burned roughly 12,000 acres. Half as many fires consumed a similar acreage in the Northern Region.

Sudbury District in the Northeastern Region had 436 fires. This was the heaviest concentration of forest fires for a single district. In addition, this area had the highest concentration of fires in Canada as reported by Simard on his 1975 Wildfire Occurrence Map of Canada. Many of the fires in the Sudbury area were the result of blueberry picking activities in mid-July. A five-day restricted fire and travel order was enforced at one point on the 20 townships immediately surrounding Sudbury in an effort to alleviate this problem.

In other areas of the province, as in the Algonquin Region, for instance, the number of forest fires was higher because of the reporting of more fires in the municipal protection areas, which previously had usually not been reported to the Ministry.

The 1975 fire season saw what was believed to be the highest provincial daily fire occurrence. On August 15, 89 new fires were recorded raising the total number of active fires in Ontario for that day to 217. In fact, August proved to be the most trying period with 15 days from August 7 to 21 accounting for one-quarter of the fires.

Fire Prevention

As part of the fire prevention program, many districts visit local elementary schools and give short illustrated lectures to convey the prevention message. This program has brought questionable results and in 1975 the Sudbury District attempted a new approach by inviting children from grades four to eight to participate in a poetry contest. A four-, to six-line poem on fire prevention was written by the pupils, and a panel of judges selected the best 20 from the two best entries from each school. The winning poems were displayed as illustrated posters and copies were posted at schools and suitable outdoor locations. Although success of the program has not been established yet, an initial study showed that children-caused fires in the area were fewer than in 1974.

Two slide-tape programs with a prevention theme were completed in 1975. One, *Ontario Forests,* is for multi-age audience viewing and the other, *This is a Forest Fire,* is aimed at the primary school age group. Both programs, as well as all of the new prevention posters, are being offered in French and English.

Training

In 1975 which was important to the field of training, a Provincial Education Co-ordinator and two Regional Training Officers were recruited. With a full complement in staff, there are now training officers in each of the five fire regions.

After forced cancellation of the basic courses in fire suppression due to the severity of the fire season of that year, these courses were reintroduced. Two separate courses ran four weeks each. Candidates attending the Fire Course I session in Geraldton received extra benefits by working on weekends to help combat a serious fire situation near the town of Manitouwadge.

The sixth annual advanced fire management course (Fire Suppression II) was held in February, 1975. This course will not be offered again in 1976 as its contents and structure are to be revamped.

The Fire Weather course, which is a prerequisite for Fire Course II and involves a considerable amount of pre-work, has now been expanded from one week to two.

Development

In 1975 as in the past few years since the equipment assessment and development program was established in 1969, items of forest fire equipment were tested and evaluated. The majority of this assessment work involved fire hose and hose line accessories, and power pumps and accessories.

The development of a photo-mosaic unit in 1973 has realized encouraging results. Due to the continued success of the system in 1975, it is apparent that the use of, and demand for, current photography in day-to-day fire management operations is just beginning to be realized.

The testing of two Monsanto Model 100 portable retardant base mixing systems was continued in 1975. Results from two summers of experience with the Model 100 indicate it provides a beneficial back-up role on prescribed burns and on certain back-fire situations on large fire operations.

Air Service Branch

During the 1975-6 fiscal year, the Ministry fleet of 43 aircraft operated out of 16 bases, flew a total of 16,973 hours and delivered 10,765 tons of cargo. Fire ranging accounted for 5,204 hours of flying time and fish and wildlife programs for 3,901 hours.

Twenty-six mercy and emergency flights were made to rescue ill and injured persons from isolated locations.

Engineering Services Branch

Engineering Services Branch supplied support in those aspects of Ministry programs requiring professional engineering, engineering technology and construction expertise.

Projects undertaken included reports, pre-engineering design, construction and maintenance of dams, docks, navigation locks and other hydraulic structures and facilities, as well as improvements to flow channels and dredging.

Pre-Engineering and Design

Projects included dams at Coopers Pond, Raven Lake, Upper Island Lake, Lutterworth Lake and Ten Mile Marsh. Other projects included docks at Sioux Lookout, Glenora and Nym Lake, a stream enhancement program on Wilmot Creek, and flood and erosion control works on the Napanee River and at Delta Mill.

Studies undertaken by consultants included further work concerning a proposed boat passage facility on Rainy River at Fort Frances and sub-soil investigations for Hullett Marsh Dam, Glenora Dock and the Upper Canada Bird Sanctuary.

Construction

Water control structures were built at Coopers Pond, Gin Creek, Mud Lake, Upper Island Lake, Westport, and at the Elva Creek outlet of Sturgeon Lake in support of Ministry programs. In addition, a dam was built at the outlet of Bennett Lake for the Mississippi Valley Conservation Authority.

A major extension was built for the Sioux Lookout Air Base Dock; the Abram's Chute Walkway was reconstructed; and new floating docks were built at Nym Lake, Thunder Bay and Geraldton Air Bases.

In North Central Region, multiplate pipe arch culverts were installed at the Whitesand River Crossing, and bridges were built at Robinson and Mercutio Rivers and at Stewart Creek in support of the access road program; the structures were designed in-house.

At Silent Lake Provincial Park, two comfort stations and a sewage lagoon were built in support of the park development program.

At Moosonee, protective groins were built for the Ministry of Treasury, Economics and Intergovernmental Affairs.

Improvements to Flow Channels

Channel improvements were made as required to improve back-water conditions at Ministry-owned dams and, in addition, erosion control works were built on the Napanee River.

A stream enhancement program was continued on Wilmot Creek to improve the fishery habitat by controlling erosion, providing shelter, and providing better access for fishermen.

Fleet and Mechanical Equipment

The Ministry fleet increased by 34 vehicles, 22 snowmobiles, three trail bikes, and nine tractors and all-terrain vehicles. This raises the fleet's fixed complement to 1,590 vehicles, 509 snowmobiles, 304 tractors and all-terrain vehicles, and 845 boats and equipment trailers.

The effective size of the operating fleet is increased during the busy summer months by taking delivery of new vehicles in the spring, but holding vehicles to be replaced until fall. The purchases of replacement equipment included 239 vehicles, 41 snowmobiles and 10 tractors.

Water Resources Engineering

Responsibility for the management of water resources is undertaken through administration of The Lakes and Rivers Improvement Act.

Fifty-three approvals of locations and plans for dam and stream diversion construction were granted under the Act, of which 36 were for dams.

Sixty-six investigations were made of water regulation problems concerning construction or operation of private dams and stream diversions.

Maintenance

From inspection reports submitted by District offices, maintenance of structures was planned and carried out as required. Major repairs were made to docks at Pembroke, Sault Ste. Marie and Port Sandfield and to retaining walls at Penage Lake; structural repairs were made to the boat rollerway at Longbow Lake Dam; and driftwood was removed upstream from Blind River Dam. Minor maintenance work was carried out at 72 other structures.

Resource Access

A total of 4,724 miles of forest access, logging access and Ministry Service roads were maintained. In addition, the Ministry shared, by agreement, the cost involved in maintaining 472 miles of private forest roads constructed by industry. This is an increase of 59 miles over the previous year.

A total of 145 miles of forest access and logging access roads were constructed or reconstructed under the Ministry's resource access program.

The Northern Ontario Resources Transporation Committee funded construction or reconstruction of 35 miles of road under the Committee Direct Program. Under the Indirect Program, where costs are shared with industry partners, numerous projects involving both the forest and mining industries were funded.

The Committee funded winter road construction to facilitate exploration in the Hudson Bay lowlands, and to provide winter access to isolated Indian communities in the northwestern and northern parts of the province.

Great Lakes Shoreline

Ontario, under an agreement with the Government of Canada, participated jointly in a survey to determine the nature and extent of shore damages and to make preliminary recommendations aimed at more effective shore management. The results of this survey, a Technical Report and accompanying Coastal Zone Atlas, will be released in the next fiscal year.

Finance and Administration Division

Administrative Services Branch

The Branch is a support group offering the administrative services that lie outside the personnel and financial fields.

Services Section

Office Management

This Unit is responsible for the design, standardization, issuance and replacement of uniforms. The existing 23 uniform types are being reduced in number and redesigned. The new uniforms will be phased in over the next two years. Other responsibilities include the following;

The continual updating of the Ministry's listing in telephone directories across the Province;

Preparation of information for the government telephone directory.

The issuance of 1,500 telephone credit cards;

The issuance of identification cards (five types) and emergency pass cards to Ministry staff;

All Branch personnel and accounting functions;

The distribution of all government manuals and their revisions, as well as the Ministry's policy and procedure directives and key personnel directory;

The equipment inventory control system and main office equipment inventory control records; and

The management of over 205,000 active Crown land files and the several incoming documents that necessitate the recording of over 80 entries daily on the cross-reference index system, and the retrieval of over 200 files daily.

Public Service Centre

Consolidation of the former Mines Publications office, the Aerial Photo Library and the Map Office has enabled the Ministry to provide more efficient and effective service to the public and government agencies.

The Centre is responsible for the sale and distribution of Ministry publications including geological maps, reports, circulars, technical mining publications, geographical maps, forest resources inventory maps, lake contour maps and the Provincial Togographic map series as well as aerial photographs in contact or enlarged format. The National Topographic map series and publications of the Ministry of Transportation and Communications are also available.

The Centre sold or distributed over 300,000 maps and aerial photographs during the year; served 26,000 cash customers, and answered 20,000 items of correspondence and thousands of telephone enquiries.

Hunting and fishing licences will be sold at the Centre in the 1977-8 fiscal year.

Data Processing Unit

This Unit accepts for keying the source documents for the Ministry's production data processing systems; schedules, submits and received computer runs and sees that the desired reports are distributed to user branches; maintains Ministry magnetic tape library; administers the Ministry's magnetic tapes retained in the library of the Central Computing Branch; maintains sufficient systems documentation to enable a contract programmer to carry out maintenance or minor revisions when requested by user branches; assists user branches in identifying computer problems and suggesting means of rectifying such problems; and keys data from source documents onto magnetic tape or tab cards in a predetermined format. The cards and/or tapes are interpreted by the Ministry's computer programs to produce the desired reports. Approximately two million records are keyed annually.

Supply Section

Purchasing

This Unit is responsible for the co-ordination of this Ministry procurement program. A wide variety of goods and services are purchased to equip the different areas of

the Ministry – lab equipment, furniture and furnishings, clothing, chemicals, etc. Where feasible, bulk purchase and standing agreements are negotiated for wide use.

Last year over 11,000 purchase orders were issued from this Unit. Approximately 18,500 requisitions were processed; resulting in the generation of purchase orders and Central Stationery, Telephone Services, Central Duplicating, Central Pharmacy, Central Mailing, Government Services and Print Procurement Requisitions.

Central Supply

Central Supply Warehouse received a total of 608 tons of supplies and equipment during the year. Shipments of more than 243 tons were made by express, freight and transport in addition to mail and internal supply to main office.

A total of 2,078547 Fish and Wildlife licences and 714,451 Park permits were distributed to field offices and 4,000 private agents who sell licences to the public. The distribution included about 50 types of licences and permits on 14,596 invoices.

Ministry uniforms were supplied from stock.

The stockroom in Whitney Block distributed supplies from the warehouse and Government Stationery Service.

The Whiteprint Copy Centre prints maps for distribution to the public. Copies totalled more than 40,000 in the year.

Records and Forms Management Section

This Section is the operating arm of the Ministry Records Management Committee. The Committee ensures that the Ministry complies with The Manual of Administration Directive and The Archive Act and that the goals and objectives of the Ministry agree with those of the government as a whole. The Section is divided into two units: Records Management and Forms Management.

Records Management Unit

The Unit is responsible for maintaining an accurate inventory of all records, records equipment and microrecording equipment; control over the initiation, maintenance, protection, retention and disposition of all Ministry records; conducting feasibility studies regarding all microrecord systems and submitting all proposals to the Ministry Records Management Committee; conducting training seminars for the Ministry in all aspects of records management; and developing Ministry file classification plans.

Forms Management Unit

The Unit is responsible for establishing, maintaining and reviewing an inventory of Ministry forms; reviewing and approving all requests for forms printing, improvement in design of necessary forms by adherence to Ministry and Government-wide design standards; providing forms analysis and design service to users to ensure that Ministry forms will accomplish necessary operations in the most efficient and economical manner to achieve the desired results; conducting in-depth analysis of all Ministry forms to simplify the flow of each form in use in a system, and to simplify the preparation and handling of the form by removing all superfluous and redundant data with emphasis on consolidation, standardization and elimination; providing technical guidance to form originators; and conducting training seminars in forms management and design for Ministry personnel.

Accommodation Section

The Accommodation Office co-ordinates the provision of accommodation for the Ministry and is the official liaison with the Ministry of Government Services for accommodation matters.

The Ministry Accommodation Plan, which is submitted to Management Board to obtain funds via the Ministry of Government Services for capital, leasing and tenant alteration projects, is prepared yearly.

The Accommodation Office supervises the development and implementation of approved projects, endeavours to facilitate communication with field offices, and ensures that the immediate, medium and long-range accommodation objectives of the Ministry are clear.

Information Branch

Information services were expanded during the past fiscal year with the establishment of a new Audio-Visual and Films Section under professional supervision.

In its first year, the Section completed eight new slide-tape programs, including a series on hunter safety, that received province-wide distribution. It also completed *Snowshoe Hunting,* a motion picture produced entirely by staff.

Section photographers completed more than 200 assignments for Ministry offices and produced 5,500 photo prints.

The photo library supplied Ministry offices with 1,400 photo prints and 2,400 color slides.

The film library loaned 1,977 films to Ministry offices and educational groups. Sixteen films were added to the library, bringing the number of titles to 309.

Exhibits

The Branch continued with the development of a revamped Ministry style in exhibits and prepared and managed exhibits at six major fairs and exhibitions during the year. Exhibits were prepared for 28 smaller fairs and shows and a number of these were managed by field offices.

Information Services

Information and Liaison Section worked closely with field offices during the year to co-ordinate field information services with main office output.

Urgent news was delivered directly to major news outlets. Background and topical information was distributed in a newsletter mailed weekly to 3,100 news outlets and special-interest groups while the French translation went to 180 outlets. Additional material was supplied on request to editors and broadcasters.

Outdoors Ontario, a radio series, was delivered regularly to 55 Ontario stations as a public service. It was supplemented by *Touch Wood,* a radio series of brief items on conservation officers in the field.

Illustrated lectures were given to schools, youth groups, service clubs and outdoor organizations.

Material was mailed to 43,600 persons who requested information on natural resources or outdoor recreation.

During the year, the Ministry published 40 booklets, eight folders and 17 leaflets or small folders. These totals included a few annual publications and revised versions of earlier printings. In addition, many scientific papers, technical reports and leaflets on Provincial Parks and other installations and services were published. New Ministry publications, released during the year, included the following:

Amethyst
Bancroft Area Minerals
Better Streams for More Trout (50¢)
Common Pests of Ornamental Trees and Shrubs
Essex Region Conservation Report
Fire Prevention (set of five leaflets)
Mammal and Bird Names in the Indian Languages of Ontario

Ontario Angling (statistical report) ($2.50)
Peterborough Petroglyphs
Sugar Bush Management for Maple Syrup Producers
Toronto's Geological Past
Trapping Guide
Vegetation for the Rehabilitation of Pits and Quarries
Vehicle and Equipment Visual Identity Manual.

Safety Programme Development Section

During the past fiscal year, safety staff carried on the Ministry driver training and testing program, first aid instruction, safety audits of Ministry buildings and facilities, investigations of accidents and injuries, defensive driving courses, boating courses, power tool inspections, and safety workshops on axes, chainsaws and snowmobiles.

The following numbers of staff were trained as noted during the year:

Driver training/testing	2,222
Defensive driving	844
First Aid	2,065
Other safety courses	2,030
Safety workshops	345
Safety inspections	943
Safety investigations	231
Off-the-job training, to public	537

Under the hunter safety training program, 25,900 new hunters were trained by 1,005 instructors certified by the Ministry, bringing the total number of trained and qualified hunters in Ontario to 287,173.

The annual report of the Workmen's Compensation Board showed a total visible cost of $568,131.02, an increase of $144,828.45 on the year, and 1,058 compensable claims, an increase of 59 on the year.

The lowest injury frequency rate in the Ministry was 9.0, achieved by Northeastern Region, improving by 3.8 on. their low mark in the previous year.

Financial Management Branch

This Branch provides accounting and financial administrative support services for the Ministry. It maintains main office records of revenue and expenditure, prepares financial statements, and supervises and co-ordinates the accounting functions of the divisional and field offices. Its responsibilities include budget preparation and control, development of accounting and costing systems, financial and cost analyses, pre-audit controls and procedures, and financial liaison with Management Board of Cabinet, the Provincial Auditor, and other ministries and agencies. The internal audit section provides a continuing review and assessment of accounting, financial and operational controls.

Financial Report

Statement of Revenue *For year ended March 31, 1976*

Statement No. 1

MINISTRY ADMINISTRATION			
Recovery of Prior Year's Expenditures		$ 24,928	
Sale of Maps, Publications, etc.		420,883	
Rentals-Ministry Houses		394,240	$ 840,051
LAND MANAGEMENT			
Recovery of Prior Year's Expenditures			
Land Acquisition	$ 39,163		
Conservation Authorities	29,312		
Remote Sensing	13,135		
Miscellaneous	18,798	$ 100,408	
Taxation-Mines Acreage Tax		643,262	
Royalties-Forest Protection Charges		2,416,564	
Fees and Licences-Mines		534,943	
Public Domain			
Leasing and Licensing of Lands	$ 943,997		
Gas and Mining Leases	750,291	1,694,288	
Sales			
Recovery Fire Fighting Costs	295,449		
Land and Buildings	260,590		
Equipment	142,306		
Air Service Flying Fees	237		
Sundary Sales	8,389	706,971	
Reimbursements of Expenditures-Government of Canada			
ARDA – Conservation Authorities	$ 500,000		
Moosonee Hydro Lines	123,700		
Dams, Reservoirs and Channel Improvements	59,784	683,484	6,779,920
OUTDOOR RECREATION			
Recovery of Prior Year's Expenditures			
Federal Sales Tax – Old Fort William Historical Park	$ 56,114		
Nanticoke Agreement	19,778	$ 75,892	

Recreation Areas			
Park Entrance and Camping Fees	$ 4,740,378		
Park Concessions	206,171		
Park Miscellaneous	2,109	4,948,658	
Fish and Wildlife			
Hunting and Fishing Licences	$11,024,625		
Royalties	284,203		
Confiscated Articles	32,742		
Miscellaneous-Fish and Wildlife	98,969	11,440,539	
St. Lawrence Parks			
Fees	$ 1,521,711		
Sales	1,099,485		
Facilities	93,473		
Miscellaneous	10,411	2,725,080	
Frost Centre			
Facilities		244,010	
Reimbursements of Expenditures – Government of Canada			
Rideau and Trent Canal Waterways and			
Adjacent Land Use Management		44,359	19,478,538
RESOURCE DEVELOPMENT			
Renewable Resource Development Recovery of			
Prior Year's Expenditures			
Construction and Rehabilitation of Dams	$ 86,225		
Algonquin Forestry Authority	67,501		
Rural Development Projects	52,237		
Miscellaneous	880	$ 206,843	
Forest Management			
Stumpage	$23,518,056		
Stock Production	182,157		
Forest Management	180,534		
Forest Products	123,309		
Miscellaneous Timber	55,207	24,059,263	
Water Management			
Royalties – Water Power		12,747,346	
Reimbursement of Expenditures – Government of Canada			
Forest Management			
ARDA – Private Land Forestry	$ 250,000		
ARDA – Grants to Municipalities and			
Conservation Authorities	47,530		
ARDA – Forest Stand Improvement	16,583		
Commercial Fish and Fur			
Resource Development Agreement	75,360	389,473	
Reimbursements of Expenditures – Other			
Forest Management			
Logging Roads – Construction Costs		317,610	37,720,535
NON-RENEWABLE RESOURCE DEVELOPMENT			
Mineral Management			
Recovery of Prior Year's Expenditures			
Mine Rescue Stations – Recovery of			
Operational Costs		$ 179,600	
Mining Tax		62,438,191	
Royalties		836,305	
Fees, Licences		119,866	
Miscellaneous		1,400	63,575,362
MISCELLANEOUS			
Recovery of Prior Year's Expenditures			10,115
Total Revenue			$128,404,521

Total Expenditures Allocated to Main Services

For year ended March 31, 1976

Statement No. 2

PROGRAMS	Activity Total	Sub-Activity Total	Land Management	Environmental Protection	Parks	Wildlife	Forest Management	Mineral Management	Conservation Authorities	Northern Affairs
	$	$	$	$	$	$	$	$	$	$
MINISTRY ADMINISTRATION (Pro-rated by Operating Activities)										
Main Office	2,609,609	2,609,609	224,948	411,013	617,695	395,617	716,077	205,898	38,361	
Field Office	9,909,096	9,909,096	854,164	1,560,682	2,345,483	1,502,219	2,719,056	781,828	145,664	
Financial Management	2,405,550	2,405,550	207,358	378,874	569,394	364,681	660,083	189,798	35,362	
Administrative Services	2,010,864	2,010,864	173,336	316,711	475,972	304,847	551,781	158,657	29,560	
Information Services	2,164,654	2,164,654	186,593	340,933	512,374	328,162	593,981	170,791	31,820	
Personnel	617,404	617,404	53,220	97,241	146,140	93,598	169,416	48,713	9,076	
Junior Rangers	2,702,920	2,702,920	184,339	442,468	1,203,070	183,258	675,460	14,325		
Northern Affairs	1,111,779	1,111,779								1,111,779
Youth Corps (S.W.O.R.D.)	3,489,122	3,489,122	185,659	161,099	526,600	390,547	308,301	41,204	1,875,712	
	27,020,998	27,020,998	2,069,617	3,709,021	6,396,728	3,562,929	6,394,155	1,611,214	2,165,555	1,111,779
LAND MANAGEMENT										
Water Control and Engineering	7,500,407									
Water Protection		3,106,595	1,310,983	795,288	52,812	900,913	46,599			
Equipment and Plant Operation		3,158,325	1,332,813	808,531	53,692	915,914	47,375			
Recreation Oriented Water Facilities		698,311	294,687	178,768	11,871	202,510	10,475			
Flood & Erosion Control Facilities		233,123	98,378	59,679	3,963	67,606	3,497			
Ministry Service Facilities		304,053	128,310	77,838	5,169	88,175	4,561			
Forest Protection	12,911,303									
Protection Services		3,081,023	27,729	2,809,893	76,101	48,680	88,425	25,573	4,622	
Communications		1,006,793	88,497	142,159	242,839	155,650	281,600	81,047	15,001	
Fire Control		8,823,487		8,823,487						
Air Service	3,065,695	3,065,695	222,263	1,278,701	217,358	958,643	332,934	42,307	13,489	
Extra Fire Fighting	7,594,177	7,594,177		7,594,177						
Resource Access	10,014,344									
Forest & Logging Access Roads		4,100,743	108,140	247,223	157,835	365,677	3,195,614	26,254		
Crown Land Subdivision and Ministry Service Roads		292,994	89,451	41,517	21,857	40,668	95,897	3,604		
Recreation Access, Public Transport and Agreement Roads		1,092,028	69,344	94,024	265,690	327,608	310,573	16,053	8,736	
Northern Ontario Resources Transportation Roads		4,528,579	1,363,102				2,830,362	335,115		
Land & Water Classification	6,691,864									
Lands Service		1,130,030	501,168			7,119	220,469	361,497	39,777	
Surveys and Mapping		3,220,746	777,814				467,945	1,779,219	195,768	
Inventory		1,081,215	429,007			35,248	616,960			
Land Use Co-ordination		1,259,873	1,259,873							
Land, Water and Mineral Title										

PROGRAMS	Activity Total	Sub-Activity Total	Land Management	Environmental Protection	Parks	Wildlife	Forest Management	Mineral Management	Conservation Authorities	Northern Affairs
	$	$	$	$	$	$	$	$	$	$
Administration	6,000,648									
Land Water and Mineral Title Service		1,592,253	841,171		473,303	36,222		241,557		
Public and Mining Lands		4,408,395	3,618,475					789,920		
Conservation Authorities	33,262,126									
Conservation Service		1,857,576							1,857,576	
Grants		31,404,550							31,404,550	
Land Acquisition	3,878,498	3,878,498	41,730		3,562,816	272,648	1,304			
	90,919,062	90,919,062	12,602,935	22,951,285	5,145,306	4,423,281	8,554,590	3,702,146	33,539,519	
OUTDOOR RECREATION										
Recreational Areas	26,559,133									
Parks Services		6,114,840			6,114,840					
Crown Land Recreation Management		1,261,759			1,261,759					
Park Management		12,544,713			12,544,713					
Park Planning Project		1,222,450			1,222,450					
Park Development Projects		5,415,371			5,415,371					
Fish and Wildlife	15,604,460									
Fish and Wildlife Service		4,955,582				4,955,582				
Wildlife		4,198,844				4,198,844				
Fisheries		6,450,034				6,450,034				
St. Lawrence Parks Commission	6,334,904	6,334,904			6,334,904					
	48,498,497	48,498,497			32,894,037	15,604,460				
RESOURCE PRODUCTS										
Mineral Management	7,796,086									
Mines Service		2,724,899						2,724,899		
Mineral Police Development and Taxation		790,058						790,058		
Industry Support and Safety Service		1,895,597						1,895,597		
Geological Survey, Inventory and Analysis		2,312,126						2,312,126		
Mine Rescue		73,406						73,406		
Forest Management	30,952,337									
Forest Service		9,070,573					9,070,573			
Silviculture Operations		10,598,381					10,598,381			
Silviculture Support		5,283,752					5,283,752			
Timber Management		5,999,631					5,999,631			
Commercial Fish and Fur	2,333,363	2,333,363				2,333,363				
Managed Forest Tax Reduction Grants	461,074	461,074					461,074			
	41,542,860	41,542,860				2,333,363	31,413,411	7,796,086		
TOTAL EXPENDITURE	207,981,417	207,981,417	14,672,552	26,660,306	44,436,071	25,924,033	46,362,156	13,109,446	35,705,074	1,111,779
Percentage of Total		100%	7.06%	12.82%	21.37%	12.46%	22.29%	6.30%	17.17%	.53%

Personnel Branch

Total Staff

March 31, 1976	Regular	Probationary	Unclassified	Total
Main Office	1,207	51	195	1,453
Field Offices	2,586	205	2,114	4,905
Total	3,793	256	2,309	6,358

Total Complement of Positions	4,096
Vacancies in Complement	47
Regular and Probationary Staff	4,049
New Employees Hired 1975-6	256

Professional Staff

March 31, 1976	
Biologists	111
Engineers	35
Foresters	259
Geologists	56
Mining Engineers	31
Park Planners	26
Scientists	59
Miscellaneous	52
Total	629
Rescource Technicians	1,521
Licensed Scalers	872

*Staff Turnover

March 31, 1976	
Deceased	15
Transferred	58
Resigned	134
Dismissed	0
Superannuated	74
Total	281

*Ration of separations to total of regular and probationary staff at March 31, 1975, was 14.1%.

Administration Staff, March 31, 1976

DEPUTY MINISTER

Dr. J. K. Reynolds

ASSISTANT DEPUTY MINISTERS

L. Ringham, *Northern Ontario*
W. T. Foster, *Southern Ontario*
A. J. Herridge, *Resources and Recreation*
J. W. Giles, *Lands and Waters*

EXECUTIVE DIRECTORS

J. W. Lockwood, *Division of Forests*
G. A. Jewett, *Division of Mines*
K. K. Irizawa, *Division of Fish and Wildlife*
J. W. Keenan, *Division of Parks*
L. H. Eckel, *Division of Lands*
W. G. Cleaveley, *Field Services Division*
G. D. Spry, *Finance & Administration Division*

REGIONAL DIRECTORS

J. R. Oatway, *Northwestern (Kenora)*
R. A. Baxter, *North Central (Thunder Bay)*
G. A. McCormack, *Northern (Cochrane)*
J. M. Hughes, *Northeastern (S. S. Marie)*
J. S. Ball, *Algonquin (Huntsville)*
T. W. Hueston, *Eastern (Kemptville)*
A. H. Peacock, *Central (Richmond Hill)*
W. H. Charlton, *Southwestern (London)*

DIRECTORS

R. M. Dixon, *Forest Management Branch*
D. P. Drysdale, *Timber Sales Branch*
D. H. Burton, *Forest Research Branch*
Dr. E. G. Pye, *Geological Branch*
Dr. T. P. Mohide, *Mineral Resources Branch*
D. A. Moddle, *Mineral Research Branch*
P. B. McCrodan, *Mines Engineering Branch*
D. R. Johnston, *Wildlife Branch*
K. H. Loftus, *Sport Fisheries Branch*
M. J. Brubacher, *Commercial Fish & Fur Branch*
J. D. Roseborough, *Fish & Wildlife Research Branch*
R. H. Hambly, *Park Management Branch*
R. J. Vrancart, *Park Planning Branch*
J. McGinn, *Lands Administration Branch*
R. J. Burgar, *Land Use Co-ordination Branch*
R. G. Code, *Surveys and Mapping Branch*
W. L. Sleeman, *Forest Fire Control Branch*
T. C. Cooke, *Air Service Branch (S. S. Marie)*
S. B. Panting, *Engineering Services Branch*
A. D. Latornell, *Conservation Authorities Branch*
A. C. Goddard, *Financial Management Branch*
R. V. Scott, *Northern Affairs Branch*
H. B. Farrant, *Personnel Branch*
J. A. Queen, *Administrative Services Branch*
F. Moritsugu, *Information Branch*
Miss M. Mogford, *Policy Co-Ordination Secretariat*
G. A. Hamilton, *The Leslie M. Frost Natural Resources Centre*

DISTRICT MANAGERS

W. D. Adlam, *Ottawa District*
R. P. Alton, *Wawa District*
E. N. Arbuckle, *Espanola District*
J. R. Bailey, *Moosonee District*
R. G. Bailey, *Napanee District*
M. P. Barker, *Atikokan District*
L. L. Bronson, *Pembroke District*
W. H. Cantelon, *Tweed District*
W. R. Catton, *Cambridge District*
J. K. Cleaveley, *Geraldton District*
D. J. D'Agostini, *Fort Frances District*
P. R. Davidson, *Aylmer District*
J. E. Dickenson, *Niagara District*
C. Dionne, *Gogama District*
T. E. Dodds, *Ignace District*
I. B. Earl, *Maple District*
C. E. Emblin, *Hearst District*
H. P. Endress, *Dryden District*
E. W. Everley, *Red Lake District*
D. R. Fortner, *Chatham District*
O. Goodman, *Bancroft District*
C. R. Gray, *Lindsay District*
L. J. Haas, *Terrace Bay District*
D. L. Hagar, *Blind River District*
J. E. Hamilton, *Thunder Bay District*
G. O. Koistinen, *Nipigon District*
R. G. Lightheart, *Kapuskasing District*
W. J. Lovering, *Owen Sound District*
W. D. Mansell, *Wingham District*
R. B. McGee, *Simcoe District*
D. B. McGregor, *Kenora District*
D. E. McHale, *Sudbury District*
J. G. Minor, *Kirkland Lake District*
J. R. Morin, *Cornwall District*
D. O'Grady, *White River District*
A. F. Papineau, *Timmins District*
W. R. Peck, *Parry Sound District*
C. E. Perrie, *Sioux Lookout District*
E. Rogers, *North Bay District*
J. E. Rumney, *Temagami District*
W. D. Schafer, *Huronia District*
J. H. Sellers, *Sault Ste, Marie District*
J. A. Simpson, *Algonquin Park District*
J. M. Small, *Chapleau District*
R. W. Tippett, *Bracebridge District*
R. H. Trotter, *Brockville District*
W. Vonk, *Lanark District*
D. D. White, *Minden District*
G. A. Wright, *Cochrane District*

Northern Affairs Branch

Northern Affairs is a supporting service for all government agencies having transactions in northern Ontario. It assists citizens with problems related to all levels of government.

The Branch operates from a small co-ordinating office in Toronto and 144 locations in the north – three regional offices, 24 "storefront" offices, 35 satellite offices and 82 contact points.

Northern Affairs offices provide information and serve as government bookstores. They carry pamphlets and forms for many programs and distribute about 10,000 publications a month.

Northern Affairs officers provide services and facilities and perform specific functions for other agencies. They hold letters of authority under several Acts administered by other ministries, and in many cases they operate across ministerial lines.

The number of transactions handled by the Branch has increased as follows across the past five years:

1971	48,492
1972	80,958
1973	132,975
1974	164,851
1975	257,248

Legal Services Branch

During the fiscal year ending with March 31, 1976, amendments were effected to two statutes administered by this Ministry, and one new statute was enacted. Amendments were made to The Public Lands Act (by Statutes of Ontario, 1975, Chapter 65), and to The Forestry Act (by Statutes of Ontario, 1975, Chapter 20).

The Mineral Emblem Act, 1975, was enacted (by Statutes of Ontario, 1975, Chapter 59).

Forty-eight regulations, made under the authority of Acts administered by the Ministry, and 457 Orders in Council were prepared and processed through the Branch during the fiscal year.

Two federal-provincial agreements were processed through the Branch during the fiscal year. One related to the performance of co-operative water quantity surveys in the Province. The second agreement concerned a joint assistance program to Indians in Ontario, continuing for five years.

Program Analysis Office

Program Analysis is responsible for co-ordinating the program planning and program accountability aspects of the Ministry's management system and serves as the Ministry's main contact with the Management Board Secretariat. Its accomplishments during the past fiscal year are summarized below.

Guidelines, support and conciliation of reports were provided for the assigning of output targets and associated dollars in the spring of 1975, the mid-year progress review in the fall, and the year-end review in early spring, 1976.

Managing by Results commitments with Management Board were introduced for 16 per cent of the Ministry's budget, covering six program areas. The objective is to have 100 per cent of the Ministry's budget on MBR by 1978-9.

Program Analysis co-ordinated the internal review and liaison with the Management Board Secretariat and subsequent monitoring of Management Board decisions on 240 Ministry submissions to the Board during the year.

Several projects of a program-analysis nature were undertaken during the year. Examples included a workload analysis of the Official Plan Review function, the development of a land acquisition priority-setting scheme, and a review of the cottage lot program.

Program Analysis co-ordinated the preparation of the Ministry's Estimates Submission.

Additional responsibilities included representation on committees reviewing a number of Ministry operations.

Policy Co-Ordination Secretariat

The Secretariat assists the Deputy Minister and his staff in co-ordinating policy planning by the following:

Providing co-ordination, integration and communication services with regard to policy planning to the various Divisions and Regions to assist them in achieving the Ministry's objectives;

Supporting the production of new policy initiatives in conjunction with the relevant Divisional and Regional staff;

Providing support, advice and information to the Divisions and Regions in assessing long-range policy needs and directions in the context of the Ministry's mandate and government objectives;

Ensuring the widest and earliest possible multi-functional consideration of policy proposals being developed within the Ministry;

Ensuring consideration of the interministerial and intergovernmental implications of policy proposals being developed within the Ministry;

Ensuring the necessary liaison with Cabinet and its Committees, and with other Ministries; and

Undertaking special policy co-ordination assignments at the request of the Deputy Minister or other members of his staff.

The Mining and Lands Commissioner

The Mining and Lands Commissioner exercises judicial, quasi-judicial and administrative powers and duties under The Beach Protection Act, The Mining Act and The Mining Tax Act, 1972, and regulations made under The Ministry of Natural Resources Act, 1972, assigning powers and duties of the Minister to the Commissioner.

Orders and judgements issued by the tribunal during the past fiscal year were as follows:

877 orders extending time for performing work or applying and paying for leases;

33 orders authorizing special renewal of licences;

93 miscellaneous orders and judgements.

The total number of orders was 1,003.

Extension orders were filed on 8,140 claims prior to default and on 860 claims for relief from forfeiture.

Hearings were held under The Mining Act at Sudbury, Thunder Bay, Timmins and Toronto.

Sixteen appeals were heard under The Conservation Authorities Act at London, Kitchener, Waterloo and Toronto. Five of the appeals were withdrawn, settled or abandoned.

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Government
Publications

Ontario

Minister of Natural Resources

Annual Report

1977

Annual Report

of the Minister of Natural Resources
of the Province of Ontario
for the fiscal year ending March 31, 1977
$1.00

TO HER HONOUR
The Lieutenant-Governor
of the Province of Ontario

MAY IT PLEASE YOUR HONOUR
The undersigned begs respectfully to present to your Honour the Annual Report of the Ministry of Natural Resources for the fiscal year beginning April 1, 1976, and ending March 31, 1977.



FRANK S. MILLER
Minister

Ontario

Ministry of
Natural
Resources

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**Related information of interest is reported in Statistics, 1977.*

Goal

The goal of the Ministry of Natural Resources is defined as follows:

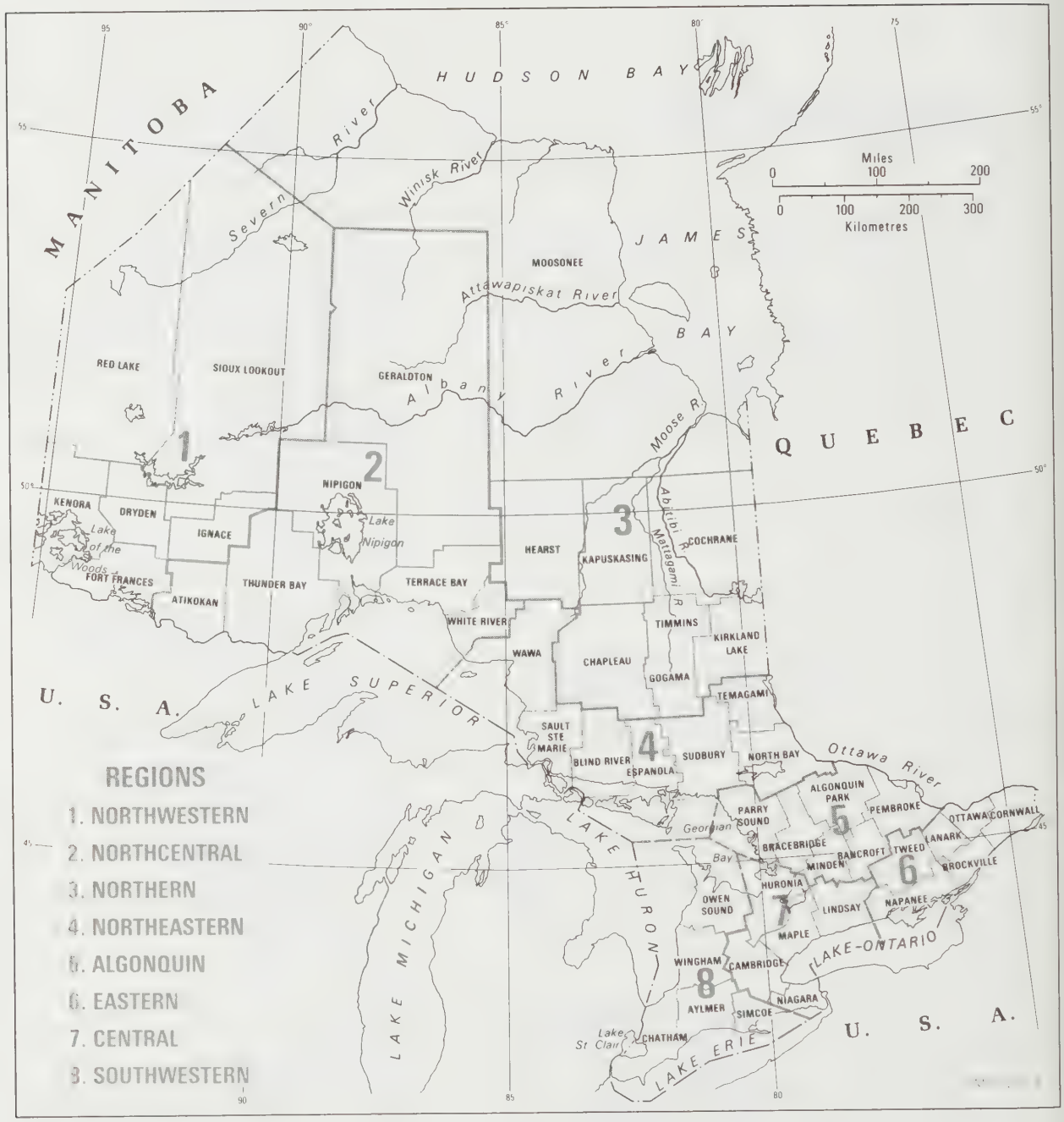
"To provide from Crown lands and waters, and to encourage on private lands and waters, a continuing combination of resource development, outdoor recreation and quality environment most consistent with the social and economic well-being of the people of Ontario."

Highlights of the fiscal year ended March 31, 1977

- Under the hunter safety training program, 26,247 new hunters were trained in 1976, bringing to 397,804 the number of hunters trained in Ontario since the program began in 1957.
- Agreements with private landowners under The Woodlands Improvement Act increased by 716 to 5,096, bringing 241,949 acres under agreement; 439 management plans were prepared for 16,683 acres.
- In a continuing inventory, 507 lakes (514,598 acres) and 2,217 miles of streams were examined; 546 fishing maps have been printed for public use.
- Geological Branch sent out 43 field parties in the summer of 1976. Their projects included the interpretive mapping of rock formations on 5,150 square miles of the Precambrian Shield.
- In an experimental innovation, two Provincial Parks were leased to private operators for one year with an option of renewal for one year.
- In 1976, a dry year, the number of forest fires was 3,985, the highest on record, and the acreage burned was 1,344,517, the highest recorded since 1923. On August 20, new fire starts numbered 120, a new record, and on August 24 the number of fires burning was 265, another record.
- Three new Provincial Wildlife Areas were opened, bringing the total to 28 areas covering 80,430 acres.
- Under The Forestry Act, the forests managed under agreements with municipalities, Conservation Authorities and the Government of Canada increased by 5,030 to 263,491 acres.
- Ontario waters were stocked with 7.9 million fish and 8.1 million fish eggs.
- Visitors to Provincial Parks numbered 10,732,666 and about one in seven participated in the activities of the interpretive program.
- Grants to Conservation Authorities amounted to $23.9 million under The Conservation Authorities Act.
- Payments under the Mineral Exploration Assistance Program amounted to $403,351, bringing the five-year total to $2,101,992.
- A total of 556,149 hunting licences was sold to residents in 1976 and 31,285 to non-residents.
- The number of lakes in Ontario was estimated at 396,792.
- On Crown lands, 272,073 acres of forest received silvicultural treatment. Trees were marked for cutting on an additional 142,155 acres.
- A winter program, funded at $350,000, assisted clubs and agencies to improve the grooming of 7,000 miles of snowmobile and ski trails. An additional 1,500 miles of snowmobile trails were maintained on public land.
- A total of 1,578 licences was issued under The Pits and Quarries Control Act.
- Field offices granted location or plan approvals for 219 dams and 64 projects involving diversion or channelization of rivers.
- Under The Game and Fish Act and related Acts, both provincial and federal, conservation officers took actions that resulted in 6,988 seizures and 5,791 convictions.
- Management plans were completed for 83,717 square miles of Crown land in 66 management units. Plans were being prepared or revised for 55,140 square miles in 23 management units.
- MacGregor Point Provincial Park was opened, bringing the number of Provincial Parks to 122.
- A total of 2,721 acres of private land was acquired for government purposes, bringing the acquisition since 1962 to 613,000 acres.
- A total of 278 townships was designated under The Pits and Quarries Control Act.
- About 1,400 water access points were maintained on public land for boaters.
- A total of 5,552 miles of forest access road was maintained.
- A total of 463.5 million cubic feet of wood was harvested on Crown lands; the stumpage value was $26.8 million.
- The commercial fish harvest in 1976 was 45.1 million pounds; the ex-vessel value was $12.5 million.
- In the 1975-6 fur year, 713,745 wild fur pelts were exported or tanned; their value was $8.5 million.
- Seventy-six regulations were made under the authority of Acts administered by the Ministry and 430 Orders-in-Council were prepared and processed.
- Internal Audit Branch was established.

Field Organization

Ministry of Natural Resources
Regions and Districts in Ontario



Division of Forests

Forest Research Branch

The Branch provides scientific and technical knowledge and information to improve the management of forest resources in Ontario.

The main research effort is in tree biology and forest ecology (rather than wood technology or economics), aimed at forest regeneration and afforestation and at improving present forests.

The production and performance of planting stock used for the artificial regeneration of Ontario's forests is a major program in which several disciplines are engaged. Studies included treatment of seed for optimum germination, effects of seedbed treatments on survival and growth after outplanting, characterization of physiological condition of planting stock, handling and storage of stock, and extension of planting season. Most of the work deals with coniferous species such as pines and spruces, but increasing attention is being paid to the artificial regeneration of broadleaf species such as silver maple, basswood, black locust and ash.

Considerable gain in growth of conifer species may be obtained by improvement of seed sources of native species and breeding of hybrids. In spruce, present emphasis is on progeny tests to determine the genetic value of seed production areas which have been selected for the vigor and good form of the trees. Similarly, tests have been performed on "plus" trees, individuals of exceptional quality. Work is in progress on hybridization and evaluation of other spruce species.

In pines, the development of blister-rust-resistant white pine continued, and the groundwork was laid for extensive work on jack pine.

Fast growing species, such as hybrid poplars, established near mills and managed intensively on the proper sites, can provide quickly a useful source of fibre, particularly in southern Ontario. The testing and selection of clones to provide an ideal combination of rapid growth, frost and disease resistance, and desirable fibre characteristics comprise an important program. Other uses of the plant material, for example as a protein source, are also being investigated. Equipment was designed and built for harvesting very closely spaced hybrid poplar plantations. Much of the work has centred on the hybrid poplars but some work is now under way on larch.

The hardwood forest of southern Ontario is an important source of lumber, veneer and speciality products such as maple sap. It is also an important recreational resource for the public and private owners. Studies involve unravelling the complexities of tolerant hardwood forest growth to improve the basis for management decisions, rehabilitating lowland and upland hardwood forests in southwestern Ontario to provide fibre and other products, and investigating the production of maple sap.

In northern Ontario, the spruce-fir-aspen forest is a major forest type. Studies undertaken by the Branch concentrate on the upland sites with particular emphasis currently on the quality and variation of aspen regeneration, the management of balsam fir, and regeneration of the spruces.

Soil and climate have a profound influence on seed germination and on survival and subsequent growth of seedlings, competing shrubs and trees. Studies include the assessment of soil moisture and nutrients, tree nutrition and fertilization, and root growth in relation to soil conditions and its effect on stem growth, biomass production and nutrient cycling.

Knowledge of the growth potential of conifer plantations and managed hardwood stands helps the forest manager to decide the best treatment for each forest condition. Studies to date have concentrated on obtaining information for red pine and hardwoods in southern Ontario. The broad field of obtaining, interpreting and using information on the forest resource is also being examined.

Forest Management Branch

The objective of the Branch is to produce optimum and continuous industrial, social and environmental benefits from public forests, and to encourage and assess similar production on private lands in Ontario.

Tree Seed Program

The inventory of forest tree seed in storage at the Ontario Tree Seed Plant, Angus, as of June 1, 1976, was 3,615,000,000 viable seeds of 92 species, weighing 16,000 kg and valued at $940,000.

The year 1976 was a good crop year for many of the species used in the reforestation program.

1976 Seed Crop by Species	Hectolitres Collected
Jack Pine	10,629
White Spruce	173
Black Spruce	171
Black Walnut	1,963
Red Oak	124
White Cedar	60
Other species	528
TOTAL:	13,648

Tree Improvement

Plus trees selected	395	trees
Scions, Grafted	9,660	scions
Grafted stock, Outplanted	1,893	trees
Seed Collection Areas*	8,525	acres
Seed Production Areas	633	acres
Seed Orchards	198	acres

**A term used to describe superior stands which are reserved and logged periodically to supply seed and then regenerated with the same seed source to maintain them as gene pool reserves.*

This program is designed to improve seed quality and increase the quantity of available tree seed to meet the requirements of the production policy.

Seed Distribution

A total of 1,401,480,000 viable seeds were used to carry out 174 regeneration projects in the Province during 1976.

This was an increase of 146,470,000 viable seeds over 1975. The seed is used in four main programs:

Nursery Stock Production	343,400,000
Tubelings	17,040,000
Direct Seeding	1,040,248,000
Research & Misc.	792,000
Total Viable Seed	1,401,480,000

Planting Stock

Distribution, Conifers	43,223,501
Hardwoods	2,757,621
Total	45,981,122
Production Targets seeded	73,532,500

Seeding targets have been reduced due to a re-examination of silvicultural prescriptions to utilize more direct seeding and modified cutting to achieve regeneration on selected sites.

Equipment Development

Final field testing of the Ontario Tree Planter was completed and arrangements are being made to turn over production to a local manufacturer. At Kemptville Nursery a used cigarette machine was converted to produce ¾-inch peat-filled cellulose containers for growing tree seedlings. Some 200,000 containers were produced for field experiments.

Silvicultural equipment built at the Mechanical Research Unit included a V-plow for use with the Ontario planter, a machine for harvesting short rotation hybrid poplar, and a device for producing poplar cuttings.

Private Lands

The Woodlands Improvement Act	Agreements	Acres
New agreements activated 1976-7	716	23,860
Agreements in effect March 31, 1977	5,096	241,949

Number of Trees Planted: 8,215,690.

These operations are carried out on private land under The Woodlands Improvement Act agreements. The acreage treated is an integral part of forest production targets, particularly in southern Ontario where there is no significant area of Crown land.

Advisory Services

1. Number of public inquiries serviced	63,373	
2. Number of field inspections made	7,113	
3. Number of forest management programs prepared	439	
4. Total area for which management programs were prepared	16,683	acres
5. Trees purchased and planted by private landowners	7,647,726	
6. Timber marked for harvesting:		
Sawtimber	2,502,416	cu. ft.
Pulpwood	12,086	cords

Classification of Cut-Over Forest Land, 1976-7

Areas in Acres

Cutting Method	Regeneration Required	Satisfactory Natural Regeneration	Regeneration not Required	Total
Clear Cut	224,362	57,761	–	282,123
Selection	–	44,521	–	44,521
Partial Cut	–	–	60,622	60,622
TOTAL	224,362	102,282	60,622	*387,266

**The reduced area from previous years is a reflection of strikes affecting the industry in 1975-6.*

Regeneration and Tending of Forest Land, 1976-7

Areas in Acres

Treatment	Crown Land	Agreement Forests	W.I.A.	Sub-Total	Other Patent Lands	Total
REGENERATION						
Planting Nursery Stock	41,687	1,837	10,358	53,882	5,830	59,712
Container Stock	4,955	–	–	4,955	–	4,955
Seeding	66,814	–	–	66,814	–	66,814
Modified Harvest Cut	27,426	204	–	27,630	–	27,630
Scarification	8,002	112	–	8,114	–	8,114
Seed Trees	10,147	–	–	10,147	–	10,147
Total	159,031	2,153	10,358	171,542	5,830	177,372
TENDING						
Hand Cleaning	11,308	2,036	1,392	14,736	–	14,736
Herbicide Spraying	24,661	670	714	26,045	–	26,045
Thinning Improvement Cuts	34,218	5,149	9,696	49,063	651	49,714
Pruning	928	1,184	431	2,543	–	2,543
Fertilization, Drainage	283	1,101	279	1,663	–	1,663
Total	71,398	10,140	12,512	94,050	651	94,701
TOTAL AREA TREATED	230,429	12,293	22,870	265,592	6,481	272,073
Site Preparation For Seeding, Planting or Modified Harvest Cutting	85,730	539	2,375	88,644	–	88,644
Tree Marking	114,338	6,893	13,302	134,533	7,622	142,155

7. Activities with youth groups	194	groups
8. Public education activities and services	1,241	items
9. Days of forestry instruction provided to schools, colleges, universities	392	days

The above data are a measure of the forestry extension program offered to all landowners. A change in landowner management practices is desired to ensure the establishment and maintenance of private forests for the production of forest products and forest values.

Agreement Forests

Agreement Holders	Added 1976-7	Released 1976-7	Acreage
1 Government of Canada	.....	.....	3,532.00
24 Conservation Authorities	329.00	.....	93,818.06
19 Counties	461.20	.....	144,047.56
10 Townships	.....	.....	3,029.24
6 Regional Municipalities	4,240.00	.....	19,064.03
60 Totals	5,030.20		263,490.89

The agencies reported above have forest management agreements with the Minister under The Forestry Act. The agencies' forests are an integral part of forest production targets, of particular importance in districts with no significant Crown land areas.

Pest Control

The most serious problem in Ontario's forests in 1976 continued to be the eastern spruce budworm. Since 1967, the infestation has expanded steadily. By the end of 1976, the budworm had attacked a gross forested area of 36.5 million acres (14.6 million ha), with the area infested in 1976 10 per cent higher than in 1975.

Aerial spraying to protect the spruce-balsam forest was conducted on 101,000 acres. In Northeastern Ontario and the Algonquin Region, spraying was confined to Provincial Parks with high recreational value (14,100 acres), whereas in Northwestern Ontario, the program was directed to 87,000 acres of production forest.

Two chemical insecticides, Matacil and Sumithion, were used for the majority of spraying. Matacil was applied at 1.5 ounces active material per acre and Sumithion at four ounces active material per acre. In part of the area, Matacil was applied, followed by Sumithion at the above rates. Orthene was applied experimentally to 1,800 acres, and a bacterial insecticide, Thuricide, was used on 2,000 acres.

The Saratoga spittlebug caused severe damage to red pine plantations in Pembroke District in 1975. In 1976, the Ministry conducted an aerial spray program against this insect on 353 acres of red pine plantation. The insecticide, malathion, was applied at the rate of eight ounces active material per acre and provided excellent control.

In co-operation with the Canadian Forestry Service, 108 acres of red pine plantation, infested with red-headed pine sawfly, was aerially sprayed with a virus which acts specifically on this insect. The application was highly effective.

In addition, small-scale treatments were required throughout the province to control a variety of pests, e.g. white pine weevil, cedar leaf miner, sawflies, white grubs, and wild currant, the alternate host for white pine blister rust. Experiments were continued to determine the effectiveness of a harmless fungus, *Peniophora gigantea*, as a biological control for root rot, *Fomes annosus*.

Timber Sales Branch

The major responsibility of the Branch is the orderly disposition of the Province's timber resource through the administration of major sections of The Crown Timber Act. This is accomplished by the review and approval of forest management plans, the allocation of the Province's Crown timber to the forest industry through various statutory methods, the licensing of forest industry mills, the measurement of the harvested volume of Crown timber, and the monitoring of factors affecting the viability of the Province's forest industry.

Management Plans

Forest management plans provide the broad framework within which forest operations are conducted. More detailed operating plans for shorter time periods identify the Crown timber stands to be harvested, regenerated and tended, and the roads and other improvements required on Crown, company and Agreement Forest management units.

STATUS OF MANAGEMENT PLANS

Areas in Square Miles	Forest Management Units: Crown No.	Crown Area	Company No.	Company Area	Agreement No.	Agreement Area
Approved Standard Plans	64	70,151	2	13,566	33	256
Plans Submitted for Approval	–	–	2	6,130	4	39
Plans being Prepared and/or Revised	15	27,994	8	27,146	23	105
New Inventory Required	3	11,362	14	30,127	–	–
Inactive and/or Inaccessible or not under plans	6	19,382	–	–	–	–
Total	88	128,889	26	76,969	60	400

Area data have been revised to include all land and water in each unit with the exclusion of waters of the Great Lakes.

Timber Allocation

Crown timber is allocated to the Province's forest industry in accordance with forest management principles and industrial requirements. Crown timber harvesting licences provide the Province's forest industry with the legislative authority to harvest Crown timber on an annual, allowable harvest basis. The timber harvesting licences take one of several major forms and are specific as to geographic area, tree species, volumes, stumpage and other charges, and various control measures.

Forest industry mills are licensed to operate with respect to Crown and private timber supplies in a specific locality.

Crown Timber Licences

Areas under Licence as at March 31, 1977	Number	Square Miles
Under Section 2, Crown Timber Act	31	225.6
Under Section 3, Crown Timber Act	395	98,219.5
Under Section 5, Crown Timber Act	14	62.0
	440	98,507.1

Mill Licences

	1973	1974	1975	*1976
Sawmills, 8-hour capacity				
Lumber, capacity over 50M fbm	67	60	53	53
Lumber, capacity 10M to 50M fbm	96	104	98	88
Lumber, capacity under 10M fbm	531	570	569	543
Miscellaneous	49	40	45	30
Veneer Mills	25	26	23	24
Pulp Mills	23	24	23	23
Total	791	824	811	761

**Preliminary*

Pulp Chips, 1976 (Preliminary)

Ontario Production	Number of Mills	Bone Dry Tons
Shipments	101	1,427,726
Inventory Adjustment	.....	.....
Total	101	1,427,726

Consumption of Ontario Chips by Jurisdictions	Number of Mills	Bone Dry Tons
Ontario	19	1,208,626
Quebec	7	134,075
Manitoba	1	1,657
U.S.A.	4	83,368
Total	31	1,427,726

Forest Industry Development

This Section is concerned with the growth and development of the components of the Province's forest industry by monitoring the demand for, and supply of, timber products and the pattern of trade in these commodities, and by analyzing resource taxation and pricing. The Section assists in industrial expansion and regional development through industrial liaison, policy development, and economic analyses.

Wood Measurement

The measurement of harvested timber, or scaling, determines the volume of timber removed from Crown land and Agreement Forests. It is the basis for the determination of public revenue and forest production statistics related to the forest industry. Only licensed scalers, approved by the Ministry, may carry out this important function. Timber measurement practices are under constant review to ensure that they keep abreast of the latest harvesting techniques.

Volume and Value of Wood cut from Crown Lands, 1976-7

Tree Species	Volume in Cubic Feet	Bonus	Crown Dues	Stumpage Value
SOFTWOODS				
White Pine	17,397,105.18	$ 599,295.45	$ 979,794.98	$ 1,579,090.43
Red Pine	5,100,676.82	163,424.68	289,882.75	453,307.43
Jack Pine	135,019,215.87	273,779.07	7,408,718.05	7,682,497.12
Pine, Mixed	97.50	140.69	5.56	146.25
Spruce	232,600,554.43	760,268.93	13,054,688.47	13,814,957.40
Hemlock	1,886,767.83	15,020.57	106,423.78	121,444.35
Balsam	14,780,470.20	49,541.59	832,517.86	882,059.45
Cedar	399,702.09	8,413.17	22,631.73	31,044.90
Tamarack	99,782.89	522.91	2,805.94	3,328.85
Softwoods, Mixed	78,681.95	16.13	942.27	958.40
Total Softwoods	407,363,054.76	1,870,423.19	22,698,411.39	24,568,834.58
HARDWOODS				
Maple	9,141,094.24	162,234.71	675,465.50	837,700,21
Yellow Birch	4,337,592.44	223,704.84	351,310.56	575,015.40
White Birch	2,258,292.93	28,866.30	27,957.24	56,823.54
Oak	227,626.17	11,118.37	15,650.77	26,769.14
Beech	454,415.90	17,345.38	31,210.70	48,556.08
Ash	45,376.41	1,062.85	9,074.75	10,137.60
Elm	31,320.18	1,010.32	2,602.09	3,612.41
Basswood	215,442.62	8,136.90	14,251.64	22,388.54
Cherry	20,958.42	345.12	1,734.86	2,079.98
Poplar	27,993,107.14	88,325.26	336,605.51	424,930.77
Hardwoods, Mixed	11,427,749.19	68,169.48	143,281.84	211,451.32
Total Hardwoods	56,152,975.64	610,319.53	1,609,145.46	2,219,464.99
GRAND TOTAL	463,516,030.40	2,480,742.72	24,307,556.85	26,788,299.57

Division of Mines

Mineral Resources Branch

The prime objective of the Branch is to assure the orderly development and optimum use of provincial mineral resources in line with the Ministry's policy of broadening the base of mineral development and processing in Ontario. The most important function of the Branch is to provide the Minister of Natural Resources with in-depth researched information and mineral policy options, as well as to ensure equitable mining tax assessments. Major areas of responsibility for the Branch are as follows:

(a) Development and administration of mineral resource policies;

(b) Analysis of the effectiveness of present public policies in various jurisdictions in respect of mineral resource development;

(c) In-depth world-wide mineral commodity studies on each mineral element in provincial mineral reserves, with priorities set for nickel, copper, zinc, iron ore, precious metals, uranium and structural materials;

(d) Administration of The Mining Tax Act, The Petroleum Resources Act, The Pits and Quarries Control Act and certain parts of The Mining Act;

(e) In-depth analysis of the existing tax systems to develop a more effective mineral taxation policy;

(f) Economic studies of metal and mineral markets and factors affecting Ontario's mineral output;

(g) Federal-Provincial liaison on mineral resources problems;

(h) Determination of an inventory of the Province's mineral resources, commodity by commodity, and commercially viable ore reserves;

(i) Continuing analysis of the mineral reserves position against present and projected world supply and demand for minerals;

(j) In-depth studies of mining and exploration company decision-making processes;

(k) Preparation of plans to stimulate exploration for, and development of, mineral resources in Ontario; and

(l) Studies on economic behaviour of multi-national mineral resources companies.

Metallic Minerals Section

The objectives of the Section are 1) to provide effective metallic mineral policy options for the Division of Mines based upon in-depth research on a commodity or topical basis, 2) to monitor metal market trends as well as technological progress in the mineral sector and, 3) to monitor policy developments in other jurisdictions with respect to their anticipated impact on Ontario metal mining and processing.

On a commodity basis, a study entitled "Towards a Zinc Policy for the Province of Ontario" was completed and published as a policy background paper in December, 1976. Work on the revision and updating of the 1974 policy background paper on iron ore continued and will be completed by fall, 1977. A similar study on nickel was initiated before the end of the year. Due to the size and complexity of the subject, completion is expected in 1978.

The second stage of the development of an economic model of the mineral industry of Ontario was completed, and a summary report was released for publication in the Annual Review issue of *The Northern Miner*. The study in its entirety is being readied for publication late in 1977. A study of the economic growth debate in its relevance for Ontario mining has been carried to the same stage.

Studies of different aspects of the problems of Ontario's declining gold mining industry were carried out to provide background material for responses to a wide variety of submissions from interested parties.

In the area of energy resources, the Section continued to evaluate developments concerning the Onakawana lignite deposits and also detailed one mining engineer to co-operate with Ministry of Energy personnel in monitoring Ontario's stake in Syncrude.

In conjunction with Geology Branch staff, the Section completed work on an inventory of the zinc reserves of the Province and commenced inventory studies of its nickel reserves. The uranium reserves inventory was updated.

Although this mineral inventory work develops a crucial part of the data base necessary for the development of mineral policy options, publication is not possible due to the confidential nature of the company data involved.

Liaison with organs of the Federal government, of the Provincial governments and of some foreign jurisdictions, as well as with mining company representatives, continued on matters pertaining to Ontario Mineral Policy and mineral industry matters of mutual concern.

There was also continuing involvement in the issues evolving in connection with the administration of The Mining Tax Act and The Ontario Mining Act.

Industrial Minerals Section

The Section has two major functions:

1. Providing the input necessary to fulfill the role of the Branch in presenting industrial (non-metallic) mineral policy options for the Province; and

2. Administering The Pits and Quarries Control Act.

The policy function will be developed on a progressive basis to deal in turn with each industrial mineral and rock commodity by implementing the processes outlined as major areas of responsibility for the Branch.

The Section's function in administration of The Pits and Quarries Control Act involves a dual role. On the one hand, consultation and guidance are provided to the Ministry's field offices which, through their pits and quarries inspectors, are responsible for implementing the requirements of the Act. On the other hand, the Section has been processing applications for pit and quarry licences forwarded from the field offices for the Minister's decision.

As of June, 1975, and December, 1976, respectively, the Ministry's Central and Southwestern Regions assumed the latter responsibility in keeping with Government's plans for decentralization of operations.

Three regional Mineral Aggregate Studies have been contracted out to consultants and completed. Those for the Central and Eastern Regions are published and available and the Southwestern study will be available early in 1977.

As of August 27, 1976, there were 278 geographic townships designated under the Act. Understandably, the majority of staff time has been expended in 1) liaison with inspectors, 2) processing the many applications, 3) ex-

plaining the Act and its purposes to applicants in personal and telephone interviews, and 4) participating in various relevant meetings.

A total of 1,578 Pits and Quarries Control Act licences have been issued in the designated areas.

Mining Tax Assessment Section

The Section experienced a major reorganization during 1975-6 to cope with the increased complexity of the Act, following the 1975 and 1976 amendments to the statute.

The Section provides draft mining tax assessments and financial data for the Mine Assessor to assist him in the administration of The Mining Tax Act and determination of the tax due.

At the end of last year, the Section staff consisted of one trained assistant mine assessor and an analyst. This staff has been augmented in 1976 by a section supervisor, two assistant mine assessors under training, and an assistant assessor under contract.

Mining tax returns were received for taxation year 1975 indicating estimated liability under the Act for 1975 operations of more than $50,000,000.

Petroleum Resources Section

The Section is responsible for all the activities associated with the oil and gas exploration, drilling and production industry in Ontario. These functions include the conservation and development of Ontario's petroleum resources in conjunction with acceptable environmental and safety standards.

Geological and engineering data are collected on all wells drilled in the Province and consolidated in the form of publications and maps which are made available to the public to encourage the equitable development of Ontario's petroleum resources.

The Section's staff includes qualified geologists, reservoir engineers and resource officers. As an integrated regulatory and scientific agency, it is able to advise Government on all problems arising from legislation and the wide variety of technical and scientific problems related to oil and gas exploration and development in Ontario and other areas of Canada.

The Section, operating under the authority of The Petroleum Resources Act and Regulations made thereunder, requires the submission of all information collected in the drilling and production of wells. This information is submitted in the form of core and drill cutting samples, engineering and geological completion reports, fluid analyses, monthly and annual production reports, and a variety of reports required of the various licences issued.

All data is validated by the appropriate regional resource officer and interpreted and transcribed by geologists and engineers into readily accessible forms by way of hard copy documents, microfilm, and computer output for both internal and public use.

Through its drafting unit, the Section compiles and constructs 15-minute quadrant maps for southwestern Ontario showing all oil and gas wells and regulation spacing areas. The maps are updated weekly and made available to the public.

The geological well samples are washed, bottled and stored in the repository facilities located in London. Here they are made available to geologists and engineers from industry and universities for research studies.

Under the authority of The Mining Act and Ontario Regulation 546/71, The Section regulates the disposition of mineral rights within Lake Erie. To the end of 1975 the Section had issued 2,523,609 acres under Licence of Occupation and 277,286 acres under production leases to a total of seven operators.

During 1975 a total of 162 wells were drilled in Ontario, including 66 wells in Lake Erie. Off-shore operations are closely scrutinized by the resource officer staff normally operating on a 24-hour basis and staying aboard the drilling vessel during critical phases of the operation.

Since 1858 more than 100,000 oil and gas wells have been drilled in Ontario, and many have never been properly plugged. As a result the Section, through Government funding, administers the plugging of hazardous wells on a priority basis, and in turn works closely with T.E.I.G.A. and other agencies in this regard.

Mineral Economics Section

The Section has been established with elements of the former Commodity Analysis Section. Its responsibilities are as follows:

1. Economic and statistical research as an input to the development of mineral policy options;
2. Development and maintenance of an economic and mineral commodity data base;
3. Annual survey and preparation of annual reports on
   (a) Mineral Industry Statistics, and
   (b) Mining Accident Statistics and Employment;
4. Collection and analysis of national and international data on all metals and minerals commodities, prices, markets, consumption trends, tariffs, duties and export-import restrictions;
5. Studies on economic impact of mineral policies in other provinces;
6. Consulting services in the field of mineral statistics to other branches of the Ministry, other Ministries and the interested public, and
7. Administration of Part X — Refinery Provisions of The Mining Act.

In 1975-6, preparatory work was undertaken on the publication of the report on Ontario's Mineral Industry Statistics for 1971-1973. The information and the statistical data previously published in these reports have been made available to the interested public on an open file. By the end of the year the open data file on mineral industry operations was completed for the years 1973 and 1974 and the statistical data on mineral production of Ontario were tabulated for 1972 and 1973.

The Section is responsible for preparation of an annual bulletin on mining accident statistics and employment.

In addition to the statistical breakdown of data by major economic areas, Northwestern, Northeastern and Southern Ontario, as well as by major mining centres, the Section also tabulated in 1975 the values of mineral output for each of the newly established Natural Resource regions.

The Section provided services in the field of mineral statistics to the staff of the Ministry of Natural Resources, other government agencies and the interested public.

Economic and statistical research on mineral resources was reoriented from pure research and assembly to applied research, targeted to output requirements.

Mines Engineering Branch

Mines Engineering Branch was transferred to the Occupational Health and Safety Division of the Ministry of Labour on December 17, 1976. The report on the Branch for the past fiscal year is included in the Annual Report of the Minister of Labour.

Geological Branch

Geological Branch provides information on the geology and mineral resources of Ontario to encourage industry exploration, to provide a basis for land-use planning, and to aid in the development of non-renewable resource policies.

Geological, geophysical and geochemical surveys identify favorable locations for mineral and aggregate deposits and provide increased knowledge and understanding of the geological history of Ontario. Existing data on mineral deposits are being compiled, and new studies have been initiated. Educational programs and published reports and maps are available to the public. Additional scientific contributions are made by the presentation of papers and field trips at geoscience conventions.

The Branch administers the Mineral Exploration Assistance Program (MEAP) whereby the Government reimburses an individual or company one-third of the cost of an approved exploration expenditure (maximum $100,000) in any of six designated areas.

Precambrian Geology Section

During the summer of 1976, 22 field parties undertook interpretive mapping of rock formations of the Precambrian Shield. A total of 1,150 square miles was mapped at a scale of one inch to one-quarter mile for publication at one inch to one-half mile. Six reconnaissance and compilation projects covering 1,000 square miles were carried out for publication at one inch to one mile.

Operation Kenora-Ear Falls, a helicopter supported reconnaissance project, covered approximately 3,000 square miles for publication at one inch to four miles. Three compilation sheets (one inch to four miles) were in preparation. On the basis of field area location, the geologists of the Section are divided into North Archean, Central Archean, South Archean and Proterozoic mapping groups.

Phanerozoic Geology Section

The Section is responsible for the survey and analysis of post-Precambrian soil and rock materials in Ontario. Major thrusts are the stratigraphic mapping of Paleozoic, Mesozoic and Quaternary age sediments and the inventory of mineral aggregates. An important role is to provide information to, and liaise with, municipalities for aggregate resource planning.

During the 1976 field season, seven field parties were operational in northern and southern Ontario. Surveys of Quaternary geology were carried out near Thunder Bay, at Sault Ste. Marie, and in the Tillsonburg, Goderich-Seaforth, and Chesley-Tiverton areas of southern Ontario. Paleozoic mapping was carried out in the Cambridge-Simcoe and Woodstock-Grand Bend areas.

A reconnaissance inventory of sand and gravel resources was carried out in much of northwestern Ontario, and more detailed studies were made of aggregates in several townships in Grey, Bruce and Huron Counties. The Section began a program to prepare detailed reports on mineral aggregates for all townships designated under The Pits and Quarries Act (1971).

Geophysics/Geochemistry Section

Geophysical surveys carried out in 1976 included a gravity survey in the Red Lake area. Geochemical-geological investigations of the relationships between massive sulphide deposits and their volcanic host rocks were conducted in the Confederation Lake and Red Lake areas with Mineral Deposits Section.

The Section was responsible for the planning and implementation at the provincial level of a reconnaissance airborne radiometric survey in the Kenora-Deer Lake area and a regional lake-sediment geochemical survey in the Pembroke-Kingston area. These surveys are part of the Federal-Provincial Uranium Reconnaissance Program to provide information for exploration and assessment of uranium potential. Development of computer-based techniques for processing and interpretation of geoscience data was continued.

Mineral Deposits Section

The Section studies deposits of both metallic and non-metallic minerals, their distribution, geology, reserves and potential. An important role is to provide reserve data and resource potential estimates for use in government planning, particularly for land use, parks and transportation corridors, and as background for studies by Mineral Resources Branch.

With Mineral Resources Branch, the Section co-operated in the National Uranium Reserves and Resources Appraisal Program and a zinc-copper resources inventory of Ontario. A two-year provincial study of nickel-copper resources was initiated.

Other studies included metal distribution maps for gold, silver, basemetals, and molybdenum; a series of mineral potential maps to aid in large-scale regional planning; a study of the nickel deposits of the Timmins area; a peat study in the Thunder Bay-Ignace area; and a revision of silica and marble deposits. In addition, many producing mines and exploration sites were visited on a routine basis.

Mineral Exploration Assistance Program

Government payments under the Mineral Exploration Assistance Program (MEAP) for the fiscal year were $403,531 with a total government expenditure in the past five years of $2,101,992. The six designated areas are in eastern Ontario, Red Lake, Atikokan, Geraldton-Beardmore, Kirkland Lake and Cobalt-Gowganda. Open File Report 5230 covers MEAP to March 31, 1977.

Geochronology Laboratory

Geological Branch, in conjunction with the Department of Mineralogy and Geology, Royal Ontario Museum, established a geochronology laboratory at the Museum. This facility is providing the absolute radiometric ages necessary for unravelling the geological history of Ontario's Precambrian Shield and its mineral deposits. Geological Branch will conduct a long-term program of radiometric age investigations with emphasis on mineralized areas such as Early Precambrian volcanic belts and on geological problems related to the formation of ore deposits.

Renfrew-Pembroke Program

A four-year mineral exploration incentives program in the Renfrew-Pembroke region was initiated in September, 1976, with funding from the Ministry of Treasury, Economics and Intergovernmental Affairs. This program is designed to renew mineral industry interest in the area by supplying information on basic geology and its relation to the known mineral deposits, and by locating areas of highest potential for each of the commodities likely to be found. Three major project phases were begun to evaluate the potential of carbonate rocks, the potential for precious

and base metals, and the potential for uranium deposits, particularly of the Bancroft and Sharbot Lake types.

Regional and Resident Geological Program

Regional and Resident Geologists' offices were maintained in the following centres: Kenora, Red Lake, Sioux Lookout, Thunder Bay, Sault Ste. Marie, Sudbury, Timmins, Kirkland Lake, Huntsville, Kemptville, Richmond Hill and London.

The principal function of Regional and Resident Geologists is to provide consultative service to government, industry and public on the geology and mineral deposits of the Province. In carrying out this function, they conducted visits on a regular basis to operating mines and both active and inactive prospects. They provided geoscience data for a variety of land planning functions.

They also undertook a variety of mapping projects and specific studies, including an examination of gold deposits associated with carbonate rocks in the Timmins area, and slope stability and hazard land studies in the Ottawa-Carleton area.

Geoservices Section

The Section provides a support and service function to Ministry geoscientists, management and public. Five sub-sections are formed according to functional responsibilities.

Scientific Review Office is responsible for the scientific review, editing and publication of all geoscience reports and preliminary maps. The following were printed during the year:

Geoscience Reports, Geoscience Studies	19
Open File Reports	49
Miscellaneous Papers, Miscellaneous Publications	10
Coloured Maps (cartography by Division of Lands)	35
Preliminary Maps	84

In addition, 32 reports were in progress and under review, and several hundred illustrations were produced by the drafting unit.

Geoscience Data Centre performs tasks related to the gathering, research, compilation and computer processing of geoscience data on mineral deposits of Ontario; indexes publications released by Geological Branch and reports submitted for assessment work credit; and within its means investigates and improves upon existing data handling systems.

During the year, 1,300 Branch publications, MEAP reports and assessment work reports were indexed for computerized storage in the Ontario Index to Geoscience Data. Several computer retrievals were made for Branch geoscientists and a Township and NTS Index to Ontario Geoscience Reports was released as an Open File Report. On-line access facilities to the Ontario Index to Geoscience Data and to commercially-based bibliographic files such as GeoRef are now provided by the Centre.

The Centre updated or compiled 120 Mineral Deposits Records for uranium deposits and 750 records for iron deposits. In co-operation with Mineral Deposits Section, work has been started on the creation of two computer-based files: one containing data on all Ontario's iron deposits and the other including geological data on diamond drill holes located in the Elliot Lake area.

Geoscience Information Office conducts and organizes classes of instruction in geology and mineral exploration, answers geological inquiries from the public, and prepares or assists in the production of popular brochures and guidebooks on the geology of Ontario. A number of mineral education courses, including two field courses and several field trips, were conducted, and during the summer half-day geological talks were arranged for Junior Ranger camps.

During the year, a revised Practical Fieldwork workbook was issued for use in Geological Branch's Practical Fieldwork Course. The popular brochure "All that glisters . . . " and the booklet "Rocks and Minerals Information" were also revised and published.

Assessment Files Research Office maintains, for public use, a library containing all technical surveys filed for assessment credit. In addition, prospectuses, summary reports from the Ontario Securities Commission and technical data filed in accordance with the Mineral Exploration Assistance Program (MEAP) were also filed.

Technical Services Office arranges for the requisitioning, maintenance and cataloguing of all field equipment, vehicles, furniture and scientific instruments for Geological Branch.

Mineral Research Branch

The function of the Branch is to provide scientific support and technical services for Division of Mines programs. The services include direct assistance to the private sector as well as in-house activities.

The Toronto and Cobalt laboratories avoid competition with private laboratories. Fees are charged for outside work. The coupon system for free work to prospectors came under scrutiny during the year.

The first phase of work on the Renfrew-Pembroke project was carried out.

Temiskaming Testing Laboratory (Cobalt) Laboratory

The primary functions of the Laboratory are the bulk sampling of silver-cobalt ores and concentrates and the determination of silver, cobalt, nickel and copper so that the market value of mine shipments can be established. While silver ores are given priority, the mill is available for the processing of other rocks, ores, and concentrates.

During the year, services to industry were expanded by undertaking to car sample low-grade concentrates in addition to the usual machine sampling of high-grade. Due to low shipments from the mines and the emphasis on low-grade concentrates, cash revenue suffered a further decline. Cost cutting measures were taken.

Toronto Laboratory — Analytical Section

This Section is equipped with sophisticated equipment for the inorganic analysis of geological materials. A large program of complete rock analysis was carried out in response to the increasing importance of petrochemistry in the correlation and interpretation of rock types in geological mapping and field work. Productivity and quality of results were drastically improved by the implementation of new automated and computerized x-ray spectrographic equipment.

Analytical work is a major component of the Division geochemical program and therefore accounts for a large proportion of the activity of the Section. Development work

and methods research is necessary to meet program needs. This centered primarily on arsenic, strontium and cesium.

Participation in standard reference material analysis was continued in co-operation with CANMET, Ministry of the Environment, and the Canada Centre for Inland Waters.

Mineral Sciences Section (Toronto)

A similar role is played by this Section with respect to mineralogy, petrology and physical testing. Examinations, consultations, and projects for the public were significant. The Section contributes in various ways to the rock analysis program, mainly through the maintenance of the rock and thin section library of the Division and the development and implementation of a computerized norm program for all analyzed samples. This is useful to geologists for the interpretation of data.

Highlights for the year were initiation of special tests for sensitive clays, a study of Ontario peat, and special studies of alkaline rocks, carbonatites and marbles.

In support of the respiratory dust program of Mines Engineering Branch to monitor quartz dust by means of personal gravimetric samplers, an automated and computerized facility has been set up to analyze dust collected by the Government and by the mines. This activity is now fully implemented. Responsibility for standardizing and approving the personal gravimetric samplers, themselves, and the distribution of silver filters was also undertaken.

Division of Fish and Wildlife

Fisheries Branch

Fisheries Branch was established on April 1, 1976, when the Commercial Fish Section of the former Commercial Fish and Fur Branch was joined with the former Sport Fisheries Branch.

The objective of Fisheries Branch is to maintain and enhance fish populations of Ontario as a stable base upon which recreational and economic benefits are provided to the people of this Province.

Fish production potentials of many Ontario lakes have been seriously reduced and several fish populations have lost their stability during recent decades. General stresses acting on fish populations are excessive exploitation, degradation of habitat and water quality (by land and water based developments and by nutrients and/or contaminants), and side effects of newly introduced or invading species such as smelt and sea lamprey.

Recovery of the former fish production potential of Ontario waters requires a more intensive degree of fisheries management effort throughout the Province. This includes continuing international participation in the Great Lakes Fishery Commission program and an increased fisheries role in water-quality management programs co-ordinated by the International Joint Commission.

The series of strategies leading to effective management of Ontario fisheries as recommended by a joint federal-provincial team were discussed with advisory groups and our field staff during the past year. Final recommendations for policies were published in the fourth report, ''Federal-Provincial Strategic Planning for Ontario Fisheries, Management Strategies for the 1980's''.

Commercial Fishery

In 1976, landings of most species remained comparable to those of previous years although there were some exceptions. As a result of management restrictions, catches of yellow perch in Lake Erie declined by 43 per cent from 1975 and this accounted for a 35 per cent reduction in the provincial harvest of this species.

Landings of catfish in Lake Ontario, Lake Erie and southern inland waters declined by 49 per cent from 1975. Catches of yellow pickerel from Lake Erie approximately doubled in 1976.

The 1976 commercial harvest of all fish species from Ontario waters of 45.1 million pounds was similar to the 45.4 million pounds netted in 1975. Strengthening prices for most fish species raised ex-vessel values to $12.5 million from $11.1 million in 1975. Bait-fish catches were relatively constant but fishermen had higher financial returns due to increased prices.

Employment in both fisheries was up slightly from the estimated 5,500 persons reported in 1975. A reported $21.7 million was invested in the food-fishery.

The Freight Equalization Program continued, under a revised rate schedule, to assist fishermen in remote areas of the Province to meet high freight costs. Harvests of otherwise under-used fish species in more accessible fisheries in northwestern Ontario were also stimulated under this program.

Under the Fisheries Industrial Development Program, otter trawling was initiated in Lake Nipissing to explore alternative techniques to harvest commercial species and, in particular, whitefish.

An estimated 700,000 migrant eels passed into Lake Ontario via an eel ladder at the Moses-Saunders Dam. Approximately 10,000 upstream migrants were tagged to assess the long-range value of providing this access.

Demonstrations of techniques and equipment to bait-fishermen were continued. This program was expanded in northwestern Ontario to include demonstrations of two temperature controlled bait-fish tanks, one of which was permanent, the other portable.

The feasibility of constructing large, monofilament-mesh trap nets was examined. This study was conducted in anticipation of further exploration and demonstration of effective impounding gear for lakes in northwestern Ontario.

Fish Culture

The Fish Culture Section is responsible for planning and co-ordinating production of eggs and young fish to be stocked in selected Ontario waters. In 1976, approximately 8.1 million eggs and 7.9 million fish were stocked. Three per cent of the eggs and 36 per cent of the fish were released into the Great Lakes and their tributaries. The remaining eggs and fish were stocked in numerous inland waters.

An estimated 95 per cent of all eggs planted were yellow pickerel. Approximately 78 per cent of all fish stocked were salmonids including brook trout (20%), lake trout (30%), rainbow trout (16%), splake (9%), and coho salmon (3%). The remaining 22 per cent included

maskinonge (17%), yellow pickerel (2%), largemouth bass (2%), and smallmouth bass (1%).

Development of the fish culture data base is continuing. When fully operational, the system will facilitate the optimization of various aspects of the fish culture program.

New draft guidelines for fish stocking were formulated in 1976 as a result of increased emphasis on policy review and priority setting. General priorities, arranged in descending order of importance, are rehabilitation, maintenance and provision for artificial fishing opportunities.

Construction of the Dorion hatchery sub-station was completed in 1976. This increases the production capability for trout by 500,000 fish annually.

Plans for the renovation of the main hatchery at Dorion were completed and construction is expected to begin in 1977. In 1976, the headwater supply and the hatchery facility were treated with a chlorine compound (HTH) to eradicate disease organisms.

Plans for the construction of the proposed new Lennox fish hatchery in southeastern Ontario were deferred because of provincial monetary constraints.

An agreement between the Ministry and the University of Guelph permitted the continuation of disease diagnostic services and fish nutrition studies. Diets continued to be modified, upgraded and tested under actual production conditions. For example, the effects of altered diets on splake and lake trout at Chatsworth hatchery were studied.

Fish Habitat (Environmental) Dynamics

Ontario waters undergo dynamic seasonal changes which are normal for aquatic life. Modern society's activities have often had detrimental effects on fish habitat. When this occurs, it reduces the ability of the habitat to produce fish. Considerable effort is required to avoid or minimize such detrimental changes as well as to recoup low-quality habitat.

The study in conjunction with the Ministry of Transportation and Communications on the effects of highway construction on a brook trout stream (Galt Creek) was completed and should be published shortly. An annotated bibliography on the effects of roads on aquatic biota was prepared as part of this study.

The co-operative study at Nanticoke, a special arrangement among Ontario Hydro, Stelco, Texaco and the Ministries of the Environment and Natural Resources, will soon be entering its seventh year. In this project, the effects of industrialization on that part of Lake Erie adjacent to Nanticoke are being assessed.

The pilot study to reclaim degraded fish habitat on Wilmot Creek continued. Bank stabilization, fencing, stream-side planting and other in-stream works have been designed to improve the ability of this former Atlantic salmon stream to produce trout. The results of this reclamation project will be applied to similar streams in Ontario.

In-stream dams continue to limit the production of natural salmonid populations. Passage of spawning fish over these obstacles might be accomplished by constructing fishways. More than 2,500 rainbow trout, as well as numerous brown trout, ascended fishways on the Saugeen and Ganaraska Rivers this year. A fishway is presently being constructed on the Lucknow River at Port Albert and a fish lock on the Beaver River at Thornbury is being planned. The benefits of trucking mature fish above barriers on streams, where fishways are not practical, are being considered.

In the continuing inventory program for lakes and streams, 507 lakes (514,598 acres) and 2,217 miles of streams were examined in 1976. A total of 546 fishing maps have been prepared for public use and another 24 are in preparation.

Contaminants in fish continue to be a problem in Ontario waters. A major effort was made in 1976 to determine the extent of the problem and to provide advice to the public concerning the consumption of fish. Approximately 7,000 fish from some 200 water bodies were collected for contaminant analysis.

We are co-operating with the Ministries of Health, Industry and Tourism, Labour and the Environment in the preparation of a contaminants information package which should be ready for public distribution in July, 1977. This package will provide detailed results of the fish testing program and a comprehensive discussion of health implications of contaminants.

A program in co-operation with the International Joint Commission and Fisheries and the Environment Canada was developed for monitoring contaminants in the lower Great Lakes to determine long-term trends of contamination in these ecosystems.

Fisheries Policy Development

The Fisheries Policy Development Section, formerly the Planning Section, is responsible for establishing a planning framework for Ontario fisheries resources and for developing policies to manage these resources.

Input is provided by the Section to strategic land use plans, municipal plans, lakeshore development studies and other planning activities within and outside the Ministry of Natural Resources. This input ensures that fisheries concerns are considered and adequately discussed at the planning stage.

Work is continuing on the development of refined methods for calculating potential fish yields from lakes. This information is essential for managing various water bodies in Ontario.

The number of lakes in Ontario is estimated at 396,792 according to a recently-completed study in which water bodies were counted and measured from topographic maps. The publication, "Counts and measurements of Ontario lakes", will be available shortly.

Data analyses from the joint federal-provincial angler survey of residents and non-residents continued. Results from this survey will provide information on the extent and location of sport fishing participation in Ontario, user characteristics, angler preferences, expenditures related to sport fishing, and limited harvest data.

A package of 96 boating restriction regulations pertaining to Ontario was submitted to the federal government for approval. These regulations were passed by legislation under the Canada Shipping Act. A brochure outlining these regulations is being prepared and will be available shortly.

Liaison between the Section (representing Ontario) and the federal government for small craft harbour development continued via the Inter-Ministerial Committee on Great Lakes Access.

Fisheries Services

Fisheries Services Section is responsible for developing and carrying out programs relating to data processing, information, training and extension, the preparation of legislation, and the printing of fisheries regulations.

Sales of all non-resident angling licences decreased significantly in 1976. Seasonal and three-day licence sales dropped 2.9 and 3.4 per cent respectively. Organized camp licences decreased from 5,810 in 1975 to 5,663 in 1976, a drop of 2.5 per cent. The sale of non-resident smelt licences, which includes bow-and-arrow fishing for carp, declined sharply by 12.4 per cent.

The Canadian resident angling licence for non-residents

of Ontario continued in popularity and sales rose by 10 per cent in 1976.

The Ontario Fisheries Information System (OFIS) has been developed to the point where the Hatchery Production and Costing data base, the Commercial Fish data base and the Creel Survey data base are all useful and in regular use.

The Fisheries Assessment data base is being tested with a pilot project which is the analysis of a large body of data collected on the Bay of Quinte.

While the development of the data bases within OFIS is well advanced, much further consolidation and integration of the system will be necessary. The application of modern data base techniques to fisheries problems is new. The experience gained is expected to lead to further evolution of OFIS and of fisheries management.

Population Dynamics

The Population Dynamics Section provides advice and consulting services to field staff involved in fisheries projects and particularly those pertaining to salmonid communities. The Section continued to participate in the Lake Huron and Lake Superior management committees in 1976. The harvest component of OFIS continued to be developed.

The Section assisted in co-ordinating the International Percid Symposium (PERCIS) held in Ontario in 1976. Selected papers presented at the symposium were reviewed by the Section.

Data entry on cassette tapes for a geographical atlas of lake trout waters was initiated. The Section, in co-operation with Fish and Wildlife Research Branch, published Research Report No. 97, "The distribution and characteristics of Ontario lake trout lakes".

Wildlife Branch

The Branch objective is to manage, enhance and interpret wildlife populations and habitats to provide optimum wildlife-based recreation opportunities for the residents of Ontario, and a continuous contribution to tourism and its related industries. Much effort is directed to the maintenance and improvement of wildlife habitat as it is habitat which determines the potential in wildlife numbers.

On April 1, 1976, the Fur Management and Resource Development programs were transferred to Wildlife Branch from the former Commercial Fish and Fur Branch.

Big Game Management

The moose population remains fairly stable. The rate of decline of the moose herd in accessible areas appears to be slowing. Moose populations in areas not easily accessible to hunters appear to be holding steady. Working with local populations of animals is important to implement a sound provincial moose management program.

The Ontaro Moose Council was established in 1976-7. The Council is now co-ordinating the provincial moose management program.

The moose management program is described by seven management items as follows: (1) wildlife management unit data-book; (2) moose population inventory; (3) moose habitat inventory; (4) moose harvest assessment; (5) moose habitat management; (6) moose co-operative research project; and (7) provincial moose management demonstration area.

Standards and guidelines have been developed for W.M.U. data-book, moose population inventory and moose habitat inventory (experimental). Development of guidelines for the remaining four management items continues.

The number of deer in the forested areas of the northwest fluctuates with winter conditions, and that in the forested areas south of the French and Mattawa Rivers declines with decreasing habitat quality. In the agricultural south, the number of deer is holding or increasing. Habitat management is required for an abundance of deer. It is concentrated on increasing the winter food supply by cutting hardwood near conifer cover.

Black bear numbers, though difficult to assess, are believed to be holding constant. Nuisance bear are trapped and released elsewhere whenever possible, or destroyed if necessary. Hunters take between 3,000 and 4,000 bears per year, and the number of bear hunters is increasing.

Timber wolf and coyote populations throughout the province remained the same during the past year.

Predation on domestic livestock was not as great as in 1975. A total of 1,169 domestic animals was reportedly killed by wolves and black bears, approximately 10 per cent less than the number reported in 1975. Sheep and lambs accounted for 1,057 of the total kill.

Ministry predator control programs resulted in the removal of 250 predators, including 46 timber wolves, 144 coyotes and 51 black bears.

Upland Game Management

Development of updated policy options for the management of small-game species in Ontario was initiated and is under further study.

All small-game species appeared to maintain healthy populations. Despite several severe snowstorms, initial reports suggest that there was minimal extra mortality in such upland game birds as pheasant, bobwhite and Hungarian partridge. European hare, cottontail rabbit and, especially, snowshoe hare occurred in favorable numbers. Ruffed grouse continued to remain at fairly high population levels in most areas.

Waterfowl Management

A program to establish a wild breeding population of Canada geese in southern Ontario, under way since 1968, has been successful, and it is estimated that 20,000 of these birds now occur in that part of the province as breeders or potential breeders.

Snow goose breeding success in the Northwest Territories is expected to be excellent in 1977 due to the early disappearance of snow cover during the nesting season. Fall populations of the duck species that breed in the Canadian prairie may be somewhat reduced as a result of a persistent drought.

Non-Game Management

This program encompasses endangered and threatened species, urban wildlife, non-game wildlife, and wildlife interpretation outside provincial parks.

Efforts with endangered species over the past year were primarily devoted to the documentation of evidence on the population status of certain species. Eight additional species were designated as endangered under The Endangered Species Act, making a total of twelve now listed.

Field programs undertaken during the year included studies on the blue racer snake, common terns, bald eagle and the West Virginia white butterfly. The white pelican studies continued in the Lake of the Woods.

A policy paper on endangered and threatened species was completed and approved.

Wildlife Branch staff participated in the planning for the

central waterfront area of the City of Toronto. This area contains some of the finest wildlife resources on the lower Great Lakes.

Wildlife interpretation weekends were held at Long Point, Presqu'ile, Luther Marsh, and Hawk Cliff near St. Thomas. These events were highly popular with the public.

Wildlife Extension and Provincial Wildlife Areas

Forty-one areas are located throughout southern Ontario to provide wildlife-based recreation on private and public land. Habitat is managed to produce wildlife for viewing, hunting and maintenance of wildlife populations. Interpretive nature trails were constructed on several provincial wildlife areas, including Fingal near Port Stanley and Hoople Creek near Cornwall.

Wildlife Services

Ontario's Conservation Officers are responsible for the enforcement of The Game and Fish Act and various other Acts administered by the Ministry of Natural Resources. They are also appointed as Fishery Officers under the Fisheries Act of Canada and as Game Officers under the Migratory Birds Convention Act of Canada, which authorizes them to enforce these Acts and regulations thereunder on behalf of the Government of Canada.

During the past year, Conservation Officers laid a total of 7,981 informations under these Acts, resulting in convictions in 6,988 of the cases heard by the courts. This was an increase of 22 per cent over the previous year.

Planning

Many kinds of plans, including recreational, forestry, mining, housing and municipal development plans, have been reviewed to ensure that wildlife interests are an integral part of planning. A major project was input to the Niagara Escarpment Planning Area. Environmental impact assessments from many sectors are increasing in number and have been carefully scrutinized with regard to wildlife interests.

Projects for the year consisted of development of a proposed master planning process for wildlife management areas, assembly of a bibliography of effects of development on wetlands, and effects of development and environmental contaminants on wildlife resources in southern Ontario.

Proposals for large-scale extractions of natural resources and other related developments in northern Ontario are being studied to protect wildlife resources and their value to northern residents.

Wildlife Surveys and Records

This office files hunting and non-resident angling licences. Statistics on participation in hunting, including participation rates, hunter success and harvest, and socio-economic characteristics of participants, are obtained through mailed questionnaires. This information supplements data obtained in the field and forms the basis for wildlife management and recreation planning.

Furbearer Management

The harvests of beaver and mink declined for the third consecutive year. In the 1975-6 fur year, 136,856 beaver were harvested and the average pelt value was $21.09, an increase of $3.13 on the year; 14,856 mink were harvested and their pelts averaged $11.34.

Trappers in southern Ontario had stricter fisher quotas in 1975-6 because there was good evidence that the animals were being over-harvested. The catch of fisher was 2,165 animals and their pelts were worth $113.42 on the average. Lynx pelts averaged $231.93 but only 1,151 animals were captured.

Trappers sold 44,223 raccoon in 1975-6 for an average price of $19.04, while hunters sold an additional 21,050 raccoons.

Trappers' workshops were held in many areas of Ontario, and work was started on a standard agenda.

Resource Development (Native People)

The resource development programs assist the native Indian people of Ontario in the utilization of renewable natural resources for their economic benefit. The following projects were carried out during the year under the Federal-Provincial Resource Development Agreement.

Fur. This program provides for the placement of Indian trappers on vacant trapline areas. Aerial surveys are conducted and maps showing live beaver colonies are supplied to the trappers. Transportation of supplies, equipment and furs is also provided.

Commercial Fish. Administrative and operational assistance is provided to native people in the Northwestern Region in their commercial fisheries activities.

Sport Fish. Lake surveys were conducted on seven lakes on the Garden River Reserve to determine their potential for sport fishing. A lake trout and brook trout management proposal was prepared for the development of a sport fishery in these waters.

Tourism. Six goose hunting camps were operated during 1976 by the Indian people along the James Bay and Hudson Bay coast. Two camps were operated solely by native people while four were provided with assistance and supervision by Ministry staff.

Hide Collection. In 1976, successful hunters provided 10,000 moose and deer hides for the native people of Ontario. The continuing success of this program is due to advertisements and hunter contacts made over the years. Presently, there are 4,000 native people involved in the craft program. It contributes significantly to their economy through the sale of handicrafts.

Timber. Assistance was provided to native people in the operation of various timber and lumbering operations, reforestation and regeneration programs. Complete timber management plans were developed for some reserve areas.

Planning. Representatives of Grand Council Treaty Areas #3, #9, Union of Ontario Indians and CORAID attend the Resource Development Committee meetings and assist in planning and determining program priorities. Indian Band Councils are contacted in regard to programs most beneficial to their needs.

Game Management. Studies to determine deer populations, mortality rates and range potential were conducted on the Wikwemikong Reserve on Manitoulin Island at the request of the Band Council. The objective of this program is to provide guidance to the band in the management of deer on the Reserve land.

Fish and Wildlife Research Branch

The objective of the Branch is to undertake or arrange investigative research which will provide the understanding of basic principles related to fish and wildlife resources needed for their optimum scientific management.

In pursuit of this objective, the Branch not only carries out relevant high-quality research and publishes its results in internationally recognized scientific literature but makes its specialized expertise available to all levels of the Ministry to assist policy formulation, program design and the analysis and evaluation of results.

In 1975, the Branch contributed significantly to the Great Lakes Fishery Commission's analyses which led to the liberalization of walleye quotas and introduction of new mesh size regulations for yellow perch on Lake Erie in 1976. Continuing dockside sampling of commercial catches by the Wheatley Research Station, in co-operation with the Lake Erie Fisheries Assessment Unit, will help in evaluating effects of these measures.

The extensive creel census program, begun in 1975 to formulate the relation between fishing pressure and the extent of cottage and other shoreline development on lakes, was continued in 1976. Arrangements were also made to begin a study of the effect on fisheries of littoral zone disturbances which attend such development. Both programs are important contributions to the Lakeshore Capacity Study being carried out co-operatively by the Ministries of Housing, Environment and Natural Resources.

Research on the genetics, physiology, reproduction, growth and survival of hybrid trout is being conducted under both laboratory and field conditions. In the laboratory a new strain is being developed from the highly selected fifth-generation splake and the lake trout. Field tests on this strain show improved survival and longevity without loss of the rapid growth characteristic of the splake.

Besides assessing the results of splake stocking in Lake Huron and adjacent waters, we are continuing to evaluate their sport fisheries potential in northeastern Ontario lakes in co-operation with the regions and districts with encouraging results.

There is a growing feeling that the native fish of our lakes and rivers may be closely adapted genetically to their particular waters, a concept having important implications for hatchery and stocking programs. We will be commencing a program in 1977 to survey the genetic characteristics of different races of brook and lake trout in Ontario as well as naturalized rainbow trout.

At four Great Lakes Research Stations and the Harkness Laboratory in Algonquin Park, numerous investigations are being conducted into the roles of environmental factors and fishing pressure on game and commercial fishes. At Glenora, for example, a Branch scientist is interested in comparing conditions in the Bay of Quinte and adjacent waters before and after the introduction of phosphorus removal to local sewage treatment plants. This is a co-operative program with other Ministries and Queen's University. Special efforts are also being made at all Stations to analyse backlogs of information, using recently acquired data processing facilities. These backlogs constitute unique and much-needed time series data related to fisheries and related factors likely to affect fishes.

In collecting data, fisheries scientists often obtain information of immediate use to local district management staff and they may be advisers to local management committees. They also act as technical representatives of the Ministry on interministerial and federal-provincial committees, the International Joint Commission for Boundary Waters and the Great Lakes Fishery Commission.

Wildlife research in Ontario seeks to fill our knowledge gaps by investigation of behaviour, physiology, reproduction, pathology, population dynamics, and interactions between wildlife and habitat for selected species.

The most extensive studies recently have concerned rabies and means for immunizing wildlife carriers against the disease. A baiting trial over an area of 600 square miles of western Ontario resulted in over 75 per cent of foxes and 40 per cent of skunks being reached with dummy baits. Because this has been the most successful trial to date, and represents a different approach, further research on a different vaccine is now required. In addition, new and valuable information on the movement of foxes and coyotes was gained by radio-tracking, giving greater understanding of these animals and of how rabies may be spread by wandering individuals.

Expansion of black bear research enabled collection of more detailed information. A survey of the prevalence of diseases and parasites in black bears will conclude in 1977 along with detailed study of the life cycle of an important bear parasite of concern to hunters.

Studies of mineral nutrition of moose showed that iron and other trace elements are sought by moose in early summer.

An audio-visual presentation, entitled "Deer and Timber — Compatible partners in management," aroused wide interest among both forest and wildlife managers.

Division of Parks

Park Management Branch

The number of campers using Ontario Provincial Parks in 1976 was 1,515,353 and the total visitation was 10,732,666.

The number of Provincial Parks in operation increased from 121 to 122 with the opening of MacGregor Point, a 1,066-acre recreational park situated on Lake Huron, south of Port Elgin, off Highway 21.

A new Provincial Park reserve was designated: Missinaibi River, a link in an historic waterway between Lake Superior and James Bay. The reserve includes all Crown lands for 400 feet on both sides of the river for a length of 265 miles.

Many existing park facilities were upgraded with improvements to water, sewage, shower and electrical systems.

Visitor Services — Interpretive Program

During the year 1.5 million park visitors attended museums, conducted trips, self-guiding trails, demonstrations and other special events to learn more about Ontario's parks.

The public information program was upgraded with a new Provincial Park brochure and a new series of park leaflets. The audio-visual unit produced several new shows, one of which won an international award for excellence.

The Regions embarked on a major effort to re-align and upgrade staff-organized programs. The first effects of this will be seen in 1977.

Winter Parks

During the winter of 1976-7, four parks were open for winter day and overnight use: Arrowhead, near Huntsville; Sibbald Point, on Lake Simcoe; the Pinery, on Lake Huron; and Rondeau, on Lake Erie. Winter facilities at these parks included snowplowed roads and campsites, heated washrooms with hot water, centrally located drinking water, fuelwood supply, garbage disposal and electrical outlets. Regular fees were charged.

Bronte Creek, midway between Hamilton and Toronto, was open for winter day-use in 1976. Facilities included an artificial ice rink, a toboggan hill, groomed cross-country ski trails, children's farm activities and heated washrooms.

Ski-tows were operated at the Pinery and Remi Lake Provincial Parks. Many other parks were used informally for activities such as snowshoeing, cross-country skiing and tobogganing.

Winter Trails

Snowmobiling was permitted in selected provincial parks on 200 miles of marked trails and 700 miles of park roads. In addition, 600 miles of cross-country snowmachine trails were operated on public lands in the province.

The winter trail maintenance program, introduced in 1975, was continued in 1976 with funding of $350,000 to assist snowmobile clubs, cross-country ski clubs, municipalities and conservation authorities to improve the grooming of 7,000 miles of trails across the province.

Access Points

Approximately 1,400 access points with parking areas and boat launch ramps were maintained to provide boaters with access to lakes and rivers.

Interior Camping and Canoe Routes

In 1976, Killarney Provincial Park introduced interior camping permits to protect areas from over-use and to preserve the quality of the recreational experience for wilderness hiking and canoeing.

New regulations were passed for Algonquin Provincial Park. An access-point quota system was introduced; a limit of 28 days stay was introduced for interior use; and a limit of nine persons per interior campsite was established.

Approximately 100,000 visitors entered Algonquin, Killarney and Quetico Provincial Parks for interior canoe camping and hiking.

Parks Leased to Private Operators

Inwood, an 81-acre recreational park situated west of Thunder Bay on Highway No. 17, and Sturgeon Bay, a 35-acre recreational park located north of Parry Sound on Highway No. 69, were made available for lease by private operators. Leases were tendered for a one-year term in 1976-7 with the option of a one-year renewal in 1977. Facilities and fees were maintained as in all other provincial parks. The results of this experiment in the leasing of provincial parks will be assessed after the two-year trial period.

Park Planning Branch

Provincial Parks Policy and Park Classification

Significant progress was made on the development of a detailed policy statement designed to direct future growth and development of the Provincial Parks system.

Detailed planning and management policies for the various classes of Provincial Parks will accompany the policy statement. These revisions to the 1967 park classification and zoning scheme were refined during the year on the basis of comments received on a preliminary draft circulated in 1975.

Park User Survey

The park user survey program, initiated in 1974, continued during the 1976 season with surveys of visitors in 19 parks. The purpose of the program is to provide information vital to the planning and management of the parks. Parks are surveyed on a rotation basis so that most parks are surveyed once every five years.

Waterway Areas

Investigations were undertaken to identify candidate areas for the proposed class of waterway parks.

Nature Reserves

Work continued on the development of systematic frameworks for the definition of significant natural features and environments of the Province. These frameworks will be employed in identifying potential nature reserves and evaluating existing reserves.

Regional Systems Planning

A study was undertaken to define the tasks required for comprehensive planning at a regional level for the Provincial Parks system. The study also made proposals for a planning program to carry out such tasks.

Recreational Land Acquisitions

Work continued on the evaluation of future parkland with emphasis on increased recreational facilities for southern Ontario residents. During the year, 1,557 acres were acquired for parks purposes.

As part of the implementation of the Niagara Escarpment Report, an additional 965 acres were purchased, making a total of 45,135 acres acquired to date. An additional 421 acres of land were purchased at Wasaga Beach.

Master Planning

In response to requests from many interested individuals and organizations concerning the official status of master plans for Provincial Parks, an amendment was made to The Provincial Parks Act in June, 1976. The term "master plan" is now defined in the Act. The amendment also authorizes the Minister of Natural Resources to prepare and approve a master plan for any existing or proposed provincial park as well as carry out periodic reviews and make necessary alterations to an approved master plan.

To date 16 master plans have been approved by the Minister, 14 are pending final review and approval, and 32 others range between initial and advanced stages of preparation. Thus approximately half the provincial parks have

master planning projects either completed or under way.

Public participation programs continued for several planning projects such as Rondeau and Wasaga Beach to encourage maximum public involvement in the decision making process.

Site Planning

During the year detailed site plans were produced for 618 approved development projects throughout the Provincial Park system.

Highlights of work during the year included site plans for the new MacGregor Point and Awenda parks as well as redevelopment plans for Wheatley and Cyprus Lake parks. Corridor improvement studies were conducted for the highway landscape through Lake Superior and Algonquin parks.

Provincial Parks Council

The Ontario Provincial Parks Council under the chairmanship of Dr. George Priddle, University of Waterloo, was appointed in October, 1974. Comprising 19 members representing a wide array of recreational backgrounds, the Council's mandate includes monitoring the implementation of the Algonquin Park Master Plan and advising the Minister with respect to the planning, management and development of the Provincial Parks system in relation to changing public needs.

In its First Annual Report to the Minister, the Council made recommendations on a wide variety of topics related to Provincial Parks.

Ontario Trails Council

The Ontario Trails Council, under the chairmanship of Mr. William E. Coates, was activated in September, 1975. The 17-member citizens' group has been given the mandate to prepare policy recommendations on the implementation of a provincial Trails Program.

The Council is holding public meetings across the Province to hear the concerns of interested snowmobilers, horseback riders, cross-country skiers, trail bike riders, bicyclists, snowshoers and canoeists. The Council will present its final recommendations to the Minister in September, 1977.

Conservation Authorities Branch

Since its establishment in 1944, the Branch has supported programs initiated and undertaken for the most part by autonomous, corporate bodies established as Conservation Authorities under The Conservation Authorities Act. The objective of the Branch is to encourage the conservation, development and utilization of water and related land resources by providing policy, funding assistance, and management and planning direction to the Authorities.

There are 38 Authorities that cover most of Ontario south of the Laurentian Shield and a few sections of northern Ontario around the urban centres of North Bay, Sault Ste. Marie, Sudbury, Timmins and Thunder Bay. They each establish and undertake a wide variety of programs to further the conservation, restoration, development and management of the renewable, natural resources of their watershed within the framework of the Act.

The Conservation Authorities Act ensures a provincial-municipal arrangement. The membership of each Authority includes representatives of all municipalities situated wholly or partially within the watershed and up to three members appointed by the Province. Consequently, the initiative and sense of responsibility of the local communities are combined with the technical and financial resources of the Province to protect and develop the watersheds of Ontario.

A Conservation Authority is formed as a result of a resolution from two or more municipal councils that petition the Minister of Natural Resources to convene a meeting for that purpose. If the vote of the municipal representatives is favorable, the Authority is established by an Order-in-Council. The Authority boundaries are then defined on a watershed basis. They may govern a single watershed, such as the Grand River system, or a number of smaller and adjacent watersheds such as the Cataraqui Region.

Conservation Authorities place a particular emphasis on water and related land management. They are also involved with auxiliary programs oriented to land use, forestry, fish and wildlife, outdoor recreation and conservation education.

All programs undertaken by the Authorities must have the approval of the Minister of Natural Resources. Each program involves a wide variety of resource management projects that receive financial assistance. The provincial grants, which are provided through the Conservation Authorities Branch, generally amount to 50 per cent of the cost of an approved project but higher rates are applied for certain types of projects. In some water management projects the federal government may also participate. The Authority raises its share of the funding by levying its member municipalities and from other sources.

Ten Authorities employ a general manager or director of operations to supervise their respective programs under the direction of a chairman. Resource managers are supplied by the Province in 24 Authorities, including three instances where the services of a manager are shared by two Authorities.

Conservation Authorities relate to the Ministry's field organization at the regional level. Four regions have program supervisors to assist the Authorities in planning and implementing their resource management programs.

Administration

One of the major changes during the past fiscal year was the revision and publication of a new *Policy, Procedure and Information Manual* which became effective in January, 1977. The manual serves as a guide for the Authorities in setting up administration and accounting procedures, in developing plans and programs, and in applying for and claiming funds from the Province. It identifies the three major programs of administration, water and related land management, and conservation and recreation land management.

A new grant structure was proposed by the Minister of Natural Resources to the Chairmen's Committee of Ontario Conservation Authorities on November 16, 1976, to update the formula to reflect current priorities. It is presently under review and will become effective in 1978.

The Maitland Valley Conservation Authority, established in 1951, was enlarged April 15, 1976, to include the

Lucknow River watershed and all its tributaries, a number of smaller water courses, and portions of six townships and the Village of Lucknow.

A new joint office building was constructed for the North Grey and Sauble Conservation Authorities at the Inglis Falls Conservation Area just outside Owen Sound.

The Junior Conservation Award Program introduces students between 16 and 18 years of age to a spectrum of conservation values and to technical conservation skills. The 1976 summer program (organized by a co-ordinator) involved 40 students who undertook specific projects proposed by Authorities in five different watersheds.

Under the Experience 76 program, the 1,443 students hired by the Branch and the Conservation Authorities gained valuable insight into resources management by undertaking projects such as the development of nature trails in Conservation Areas, the restoration of historical sites, the removal of debris from water courses, the construction of river-bank retaining walls, and the compilation of wildlife inventories.

Water and Related Land Management

Programs within this section relate to water management and flood control and therefore include projects such as flood plain mapping, environmental assessment, dams, channel improvements, erosion control structures, and water quality monitoring.

A Flood Plain Criteria and Management Evaluation Study was initiated in the spring of 1976 by the Ministries of Housing and Natural Resources to assess the criteria and floodplain management practices in view of increasing land values and urban growth. The study reviews the present floodplain management in Ontario and documents alternative strategies which could be adopted. The summary report and discussion paper will be made available to ministry agencies and the public for review in the early part of the summer of 1977.

The Thames Basin Water Management Study was completed and released. This joint project of the Ministries of the Environment and Natural Resources sets out the water management options for the watershed. A technical committee was appointed to review its recommendations.

The initial draft of a *Watershed Survey* to indicate the water related problems in the Mattagami Region C.A. was completed.

The Essex Region C.A. completed the *Essex Shoreline Study*, a major erosion study which identifies areas of problem erosion along the Essex County shoreline and suggests possible solutions.

The capital development projects which received major funding in 1976 involved nine Authorities. The Cataraqui Region C.A. virtually completed the construction of the Millhaven Dam and Reservoir on Millhaven Creek.

The Grand River C.A. completed construction of the Guelph Dam and Reservoir on the Speed River and it was officially opened in July. Other major projects of this Authority relate to continued land acquisitions in the Everton, the Cambridge-Galt and the Hanlon Creek Valleyland Assemblies, and the completion of a further phase of the Speed River Channel Improvement.

The Halton Region C.A. completed construction on the Hager-Rambo Diversion, the largest single capital development project for the year. Metro Toronto Region C.A. finished another phase of a five-year Erosion Control program in the city for stream and valleyland stabilization and the second year of a five-year Flood Plains Land program to continue the land assembly of valleylands in accordance with the master plan.

Moira River C.A. completed the engineering and began construction of the dam for the Belleville Ice Control.

Nottawasaga Valley C.A. ended the third phase of construction for the Pretty River Dyking, a flood protection project for Collingwood.

Rideau Valley C.A. completed the Brewers Park Dyking for flood control along the Rideau River.

South Nation River C.A. finished construction of the Crysler Dam, a general water control structure on the South Nation River.

St. Clair Region C.A. completed the initial engineering and continued land acquisition for the Wilkesport Dam and Diversion, a flood control measure for Wallaceburg and the lower Sydenham River area.

Other development projects to receive M.N.R. funding included the following: the Glengowan Dam in the Upper Thames C.A. where preliminary engineering was completed and land acquisition began for purposes of flood control and water augmentation; initial land assembly in the Potageville Swamp on the Schomberg River by South Lake Simcoe C.A. to complete the flood protection works in the area; and the preparation and approval of the Bennett-West Davignon Diversion project by the Ministry of Natural Resources in the Sault Ste. Marie Region C.A.

A dyking project involving federal-provincial input is concerned with the protection of valuable agricultural lands by the Lower Thames River, the Essex Region and St. Clair Region Conservation Authorities along the Lower Thames River, Pelee Island, Lake St. Clair and Sydenham River shorelines. This work is to continue next year.

Flood plain mapping was virtually completed in the urban centres and areas of potential development in four of the five northern Authorities.

The Hydrometerological Section of the Branch is concerned with the collection of hydrometric and precipitation data and was involved with flood warnings along the Grand River when a major thunderstorm arose on June 30 in the area of Fergus. Serious flooding occurred along sections of the Grand River and one of its tributaries, the Irvine Creek, but due to an early warning, no lives were lost and property was saved.

The spring of 1977 saw the second most severe flood on record along the Thames River. It was largely controlled by the three major reservoirs in this watershed (Wildwood, Fanshawe and Gordon Pittock) but some flooding did occur in Chatham and smaller urban centres such as St. Mary's and Thamesville. Flooding this spring was also severe in the Saugeen watershed, especially in the town of Paisley as a result of ice jams.

Conservation and Recreation Land Management

This program relates to projects involved with landscape protection, reforestation and woodlot management, improved land use methods, outdoor recreation, information and outdoor education, fish and wildlife inventories, and pollution abatement.

The major capital development project occurred in the Hamilton Region C.A. within the Fifty Mile Point Conservation Area located on the southwest shore of Lake Ontario in Stoney Creek. Planning studies were undertaken for shoreline stabilization in this area.

Five Authorities were involved in waterfront studies to provide planning guidelines and recommendations to improve and maintain the recreational potential of the shoreline.

The Metro Toronto Region C.A. completed the first five-year phase of its *Waterfront Plan* and received Ministry approval for Phase II to continue the planning, development

and management of the Lake Ontario waterfront within its area of jurisdiction from 1977 to 1981.

The Essex Region C.A. was involved in the preparation of plans for the *Metro Windsor Waterfront Study*.

The North Grey Region C.A. completed the *Bayshore Development Planning Study* which represents a request from Owen Sound for assistance in planning the waterfront. A five-year program outlining the development phases will be set forth in the near future.

The Sault Ste. Marie Region C.A. completed and published a *Waterfront Development Study* for purposes related to the creation of more public open space and recreational facilities, the preservation of existing natural and cultural features, and the general improvement of the appearance of the waterfront.

The Lakehead Region C.A. completed a final report on the Recreational Concept for the Lakehead Region waterfront. The two last studies will be reviewed in 1977 for final approval by the Ministry.

The North Bay-Mattawa C.A. acquired the Eau Claire Gorge Conservation Area on the Amable Du Fond River. The land was purchased to conserve the historical and unique natural resources of the area.

Two Conservation Authorities were actively involved in initiating an outdoor education program. The final plans were formulated for the Scanlon Creek Outdoor Education Centre in the South Lake Simcoe C.A. and the Centre is to be opened next year. The Ganaraska Region C.A. initiated plans for the Cold Springs Outdoor Education program. This is one planning segment in the over-all multi-use development scheme for the 10,000-acre Ganaraska forest.

The Otonabee Region C.A. began land assembly for the Peterborough Valleyland Program through the core of the city to complement the urban development of this area.

Branch Administration Costs

Field Services	$ 713,181.00
Program Planning and Land Management	404,009.00
Water Management Engineering	570,760.00
Field Surveys	67,659.00
Junior Conservationist Program	65,538.00
Total	$1,821,147.00

Grants to Authorities, 1976-7

UNDER THE CONSERVATION AUTHORITIES ACT

Ausable-Bayfield CA.	$ 303,224.56
Cataraqui Region CA.	751,143.21
Catfish Creek CA.	40,763.96
Central Lake Ontario CA.	410,900.47
Credit Valley CA.	1,226,031.58
Crowe Valley CA.	90,947.35
Essex Region CA.	221,313.09
Ganaraska Region CA.	233,670.57
Grand River CA.	3,478,989.08
Halton Region CA.	3,641,439.95
Hamilton Region CA.	1,027,050.18
Kettle Creek CA.	166,404.00
Lakehead Region CA.	171,734.14
Long Point Region CA	268,672.45
Lower Thames Valley CA	525,168.85
Lower Trent Region CA	348,045.69
Maitland Calley CA	384,589.86
Mattagami Region CA	186,497.30
Metropolitan Toronto and Region CA	3,709,175.05
Mississippi Valley CA	158,954.55
Moira River CA	508,756.67
Napanee Region CA	177,375.50
Niagara Peninsula CA	464,052.59
Nickel District CA.	252,278.41
North Bay-Mattawa CA.	73,302.51
North Grey Region CA	352,833.70
Nottawasaga Valley CA.	648,515.63
Otonabee Region CA.	247,820.11
Prince Edward Region CA.	151,041.18
Raisin Region CA	209,539.67
Rideau Valley CA	380,156.34
Sauble Valley CA	123,284.96
Saugeen Valley CA	372,356.86
Sault Ste. Marie Region CA.	238,135.22
South Lake Simcoe CA	386,159.23
South Nation River CA	267,760.22
St. Clair Region CA.	954,164.62
Upper Thames River CA	779,763.28
Total	$23,932,012.59

UNDER EXPERIENCE '76

Grants to Conservation Authorities	$1,821,147.00

Division of Lands

Lands Administration Branch

Crown lands within the Province, including mining lands, are administered by the Branch. Its responsibilities include the acquisition of private lands where necessary for Ministry programs.

Land Acquisition Section

Private lands required for Ministry programs, such as wildlife, forest management and public recreation, are purchased by the Section. It assists in setting priorities, supervises and approves all purchases, and maintains a computerized inventory of acquired property. To assure the delivery of optimum benefits from such lands until their incorporation into programs, interim property management is provided. In the past year 2,721 acres were acquired, raising the total acquisition since the Section's formation in 1962 to more than 613,000 acres. Continued emphasis is being placed on consolidation of holdings to allow development of the properties.

Titles Section

The Section prepares and maintains a written registry of the legal documents required for ultimate disposition of Crown lands. It is also responsible for maintenance of the Ministry filing system used in conjunction with the registry for administration of the Province's Crown land base. A pilot study, scheduled for completion in the 1977-8 fiscal year, has been initiated to determine whether or not the written registry should be computerized and supplemented by additional data, in particular a geocode. A pilot test to

determine the feasibility of microfilming the land files is also under way.

Additionally, the Section levies mining acreage tax and carries out procedures necessary to effect forfeiture to the Crown of alienated mining lands.

Mining Lands Section

The Mining Act gives the Section authority to manage Crown mining lands as follows:

(a) Ruling on mining leases and exploratory licences of occupation applying to large tracts where normal claim staking is impossible;

(b) Issuing permits for sand and gravel removal;

(c) Setting policy, formulating and providing interpretation of statutes;

(d) Recording mining claims and quarry permits in regional offices; auditing claims and permits at Queen's Park;

(e) Assessing all geophysical, geological and other technical survey reports; and

(f) Withdrawing Crown lands from any form of disposition.

The removal of sand or gravel from beaches, banks or waters of all lakes and streams is licensed and regularly monitored by the Section. Removals from private property are licensed as well as the large commercial extractions that provide considerable revenue in the form of royalties.

Liaison between the Ministry of the Environment and field staff specialists ensures that erosion or significant damage to fish and wildlife populations or habitat is prevented. Municipality operations are exempt from Ministry licensing and supervision.

The pit and quarry rehabilitation program on Crown lands continued under regional direction.

Public Lands Section

The primary function of the Section is management and disposition of the public land base, principally for resource and recreational purposes, through co-ordination of main office and field offices. Comprehensive guidelines and direction are provided from main office in the form of policy and procedure directives, an audit system to monitor performance quality, and training to continually update the necessary land management expertise.

Fifteen new directives were processed, published and distributed during the past fiscal year with another 13 well on their way to completion. Fifty-two candidates successfully completed the Lands Certificate Course and a four-phase training program is being developed within the Section. All but two Regions have been visited by a member of the main office staff who is responsible for the performance quality auditing function.

Office of Indian Land Claims

The Office of Indian Land Claims was established in 1976, as a separate entity within the Division of Lands with the responsibility for researching and responding to Indian land claims and other Indian land problems. It also is responsible for keeping the Ministry (and Government) aware of the possible extent of future land claims and their significance.

The Office develops Ministry positions on these claims and prepares recommendations to Cabinet. It undertakes research for these in consultation with other ministries and with the Federal Government and Indian bands and their associations. On the direction of Cabinet, it also negotiates the settlement of valid land claims with the Indian people involved.

Land Use Co-ordination Branch

The Land Use Planning, Land Use Liaison and Plan Review Sections, which comprise the Branch, continued to co-ordinate Ministry planning, assisted other ministries and planning agencies such as municipalities with land-use plans, and maintaned a sensitive-areas recording system. The Branch updated environmental assessment procedures for Ministry undertakings and co-ordinated Ministry environmental assessment responsibilities.

Strategic Land Use Plan

The Branch continued to place great emphasis on preparation of the Strategic Land Use Plan which, when completed and approved, will serve as the official co-ordinating guide for all Ministry programs that require land.

To formulate a comprehensive, co-ordinated policy, the Land Use Liaison Section held a series of meetings with other ministries to discuss a variety of land-use policies. Both main office and field staff participated in collecting and analysing data necessary for policy making.

As a result, reports have been prepared to provide background information and approach to policy for the Northwestern, Northeastern and Southern Planning Areas.

The Northwestern information report has been publicly reviewed and Phase II of the planning process prepared for review. This phase is the policy report which outlines all the objectives to be achieved. Phase III, the "Strategy" for northwestern Ontaro, is now being developed and is to be completed in 1977.

For both the Northeastern and the Southern Planning Regions, certain revisions are being made before the information report is released for public review. Similarly, Phase II is undergoing modification. Plans have been made to release both reports for each region in 1977.

Land Use Planning

The Branch again worked closely with the Ministry of Treasury, Economics and Intergovernmental Affairs on the Parkway Belt-West Land Use Plan and the Northwestern Ontario Development Strategy, and with Ontario Hydro on planning methodology for transmission corridors and their East and West System Planning Studies. It also maintained close co-operation with the Ministries of Environment, Industry and Tourism, and Agriculture and Food.

On other government levels, planning assistance was given to such projects as the Central Waterfront Plan under the auspices of Metropolitan Toronto, Design for Development, regional task forces, and to several municipalities preparing official plans, among them the Regional Municipalities of Peel, Haldimand-Norfolk, York, Halton, Perth County and the reorganized County of Oxford.

The Ministry continued to prepare local land-use plans, one of which, the Lake of the Woods General Land Use Plan, was submitted to the Ministry of Housing for circulation as an official plan.

Lake Planning

The Ministry's new three-year cottaging initiative is midway to completion.* The program is intended to expand the

**It was incorrectly reported in last year's Annual Report that 1975-6 was the second year of the lake planning cottaging initiative. It was in fact the first year of that program's operation.*

number of cottage lots provided on Crown land in northern Ontario. Comprehensive lake plans were prepared by field staff following guidelines in the Branch's Lake Planning Manual which underwent further revision on the basis of experience gained during the previous field season.

The Branch began a study to determine the suitability of small Crown lakes and rivers for various recreational activities with particular emphasis on cottaging.

Plan Review Activity

Development proposals from individuals, private concerns, other government agencies and municipalities can have a significant effect on Ministry objectives and programs. It is important to ensure that such proposals are compatible with, and create no serious adverse impact on, MNR's objectives or programs. While proposals throughout Ontario are reviewed, development pressures are most vigorous in the southern regions. In reviewing and commenting on development proposals, the Ministry makes a valuable contribution to the maintenance of a good-quality environmet and the continuing productivity of provincial resources.

The number of plans reviewed in the past year increased by 37 per cent over the previous year to a total of 6,706. More official plans, official plan amendments, zoning by-laws and severances but fewer subdivision plans were received.

During the year, Ministry undertakings that are subject to The Environmental Assessment Act, 1975, were authorized by Regulations. The Ministry's method of conducting assessments was modified and assessments commenced for seven undertakings.

Surveys and Mapping Branch

The Branch functions as a service agency that carries out ground and aerial surveys of various types and produces a wide variety of maps for the Ministry, Government and the general public.

Two types of surveys are conducted: those which locate land boundaries or define ground position for official purposes, and those which record the nature of land and assess its future potential.

Cadastral Surveys Section

During the past year, the Section continued to maintain the township boundaries of the township survey system in the Province, with land surveyors in private practice performing the survey work under agreement. The Section provides a survey service to other Branches and maintains the Crown survey records system.

Control Surveys Section

The Section undertakes the precise fixing of requisite ground points for mapping control. The geodetic network which is thus created supports co-ordinate systems associated with surveying, engineering and geographical referencing.

In operation is a computer program that conducts mathematical adjustment of large networks of survey control. This has also been used by personnel outside the Section. Nearing completion is a data bank to manage all control survey information.

The installation of control surveys under agreements made with the Regional Municipalities of Waterloo and Hamilton-Wentworth continued this year. A similar survey agreement has been prepared with Newmarket. A program to construct a base line for the precise calibration of electronic distance measuring instruments has begun.

Inventory Section

The Section is composed of two units: Forest Resources Inventory and The Ontario Land Inventory.

The Forest Resources Inventory Unit arranged for the aerial photography of 28,000 square miles of forest land in northwestern Ontario. In addition, field sampling, photo interpretation and compilation and drafting of forest stand maps was completed with the co-operation of forest operating companies for 15,000 square miles in northern Ontario.

The Ontario Land Inventory Unit sent numerous field parties to investigate soils and terrain and evaluate the potential uses of land and water for recreation, wildlife habitat and hazards to human occupation. This Unit was disbanded March 31, 1977.

Cartography Section

The Section is responsible for production and maintenance of Ontario's topographic, territorial and geological map series. In addition to these maps, other scientific, recreational and administrative maps for both Government and public distribution, plus a variety of brochures and booklets related to resources and recreation programs of the Ministry, were produced this year.

In conjunction with the Geographical Referencing Section, further exploration was conducted in the environment of a working laboratory into Ministry applications of computer-assisted mapping systems.

Manpower and expertise was supplied towards the development of cartographic standards and subsequent monitoring of the experimental Ontario Basic Map Series.

Drafting Services Section

The Section provided general drafting and mapping services and graphics in support of Branch and Ministry programs. In addition, it maintained a graphic inventory of timber, minerals, oil, gas, land and other resources.

Geographical Referencing Section

The Section continued work on the development and testing of several thematic application projects using digital technology. A status report on the Forest Resources Inventory, Lake Measurement and Shoreline Classification projects was prepared. Investigations of interactive graphics and automated cartography systems continued. A preliminary investigation was made into the possibility of transferring the Lake Measurement and Shoreline Classification projects from an Ottawa-based federal government computer onto the Queen's Park Computing System for production purposes.

Several basic maps were digitized on the Ministry's remote sub-system to determine the current capabilities and cost effectiveness of the Federal Department of Energy, Mines and Resources' Automated Cartography System.

Location identifiers (geocodes) were produced for the centres of land parcels in the first stage of a pilot project involving computerization of Ministry land indexes.

The geocode format was designed in co-operation with the Ministry of Consumer and Commercial Relations.

Office of the Co-ordinator of Mapping Services

The Branch completed three years of studies dealing with Provincial basic mapping and geographical referencing systems, resulting in a final report, Number 10, "A Proposed Provincial Basic Mapping Policy and Program," that recommended standards of accuracy and quality for basic Provincial mapping.

Preparatory work was commenced on the definition of Provincial basic mapping standards. Contracts were let using draft standards for 85 trial maps in the Niagara Peninsula, 24 in the Timmins area and 11 in the Opasatika area. Most of these were completed by year end and are awaiting technical and consumer evaluation.

Ontario Geographic Names Board

The Board provides and maintans official names of geographic features and unincorporated places required for identification and referencing on maps, charts and related documents of the Provincial and Federal Governments. The Board Secretariat co-ordinates field surveys and other research undertaken by main office and field staff to collect and update geographic name data.

A three-month toponymic field survey project has been designed for areas in the Ministry Districts of Fort Frances, Ignace, and Atikokan. Researchers will investigate a 20,000-square-mile area for 46 federal maps scheduled for publication in 1977. Field survey projects in Kenora, Temiskaming, Dorset and adjacent areas were completed.

Ontario Centre for Remote Sensing

The Section interprets aerial photography and satellite imagery for application to the data needs of resources management, and conducts research into new remote sensing applications. This year 50 remote-sensing and research projects were undertaken.

For the first time in Canada, the thermographic technique for detecting building heat loss was put into operation.

The feasibility of conducting forest fuel mapping, regeneration success survey, forest typing and wetlands classification from satellite imagery was established.

Case study presentations were given at Ministry Regional Offices and scientific papers delivered at both national and international remote sensing conferences.

The Centre's analogue image analysis capability was increased and an investigation was conducted into techniques of analysing digital images.

Field Services Division

Forest Fire Control Branch

Once again, as was seen in the 1975 fire season, Ontario has established another record high for the number of forest fires in one year. At 3,985, the total for 1976 exceeded the previous year's record by 839 fires. The acreage, too, was extensive as 1,344,517 acres burned, to compare with the records of 2.1 million in 1923 and 1,294,800 in 1974.

Lightning was responsible for 2,086 fires or 52 per cent of the total while man-caused fires accounted for the balance. As in 1974, when northwestern Ontario was a major hotspot, the 1976 fire season will go down in history as one of the worst experienced in Ontario, particularly in the northwest region of the Province.

Suppression activity started early in the fire season, with 720 fires occurring in the west from May 24 to June 14. These fires ranged in size from 0.1 acre to 50,000 acres.

Exceptionally hot weather, high winds and lack of rain from May until the end of September contributed the most to this fire spread and, hence, to several major fire starts. The weather was predominantly sunny and dry with above-normal temperatures. The pattern was occasionally interrupted by very weak weather systems which brought lightning, but little or no precipitation.

Fire activity over the remainder of the summer continued to be abnormal under the influence of this drought. In the Dryden area alone, the total of 189 fires was four times the average of 48 fires in the past ten years.

The situation peaked between August 15 and 30. In Sault Ste. Marie, for example, two heavy lightning storms swept through the district, leaving 127 fires burning. More than 1,000 fires were reported during this time and on August 20, 120 new fires occurred, setting a new daily incidence record. Another record established during this period was the number of active fires on one day. This was 265 fires, all burning on August 24.

The Ontario fire season is normally over by October 31, up until which time The Forest Fires Prevention Act is in effect. This past year, however, fires were being reported in December. In the Atikokan area, a continuing drought kept firefighting alive until November. Major difficulty was encountered in extinguishing fires due to the deep burning.

Under The Forest Fires Prevention Act, numerous restricted fire zones were declared. In addition, four areas that were threatened by fires were placed under fire emergency orders. Approximately 350 people were evacuated from their communities under the authority of these orders. Fortunately, none of the villages burned and most people were able to return home within a few days.

In short, the 1976 fire season proved to be a challenge of endurance for everyone involved in fire control.

Fire Prevention

On 15 separate occasions, the Ministry imposed fire restriction orders which covered portions of northern and northwestern Ontario. These restrictions were declared in an effort to minimize the number of man-caused fires in the drought-affected areas and they were in place during 45 per cent of the fire season. Their effectiveness in reducing recreational fire starts was evident through checking daily fire incident patterns. Observations of certain key areas by an infra-red unit supported the observation that most people obey the restrictions. Despite this, people using the forests for recreational purposes still accounted for 20 per cent of the forest fires in 1976.

Training

One Atmospheric Environment Services weather course, designed for senior fire management staff, was held in 1976.

A total of 50 employees attended two Fire Courses which

were held in the spring. This course is of 13 days' duration and successful candidates are qualified as initial attack fire boss.

Two prescribed burning seminars were held in the fall to provide fire and timber staff with the knowledge needed to understand how to plan a prescribed burn, what benefits should be derived and how to conduct the burn. Seventy employees attended these courses.

Development

Despite the demands placed on fire personnel in handling the heavy fire load, the equipment development and testing program managed to make advancements in several areas during 1976.

A committee was established to develop and maintain a forest fire suppression equipment standards manual which was ready for use in the 1977 fire season.

Through the Ministry's staff suggestion plan, whereby field ideas can be brought forward and evaluated, a number of fire-related inventions and equipment modifications were submitted in 1976. For example, a modified fuel line was designed for use with the scepter gas can and other existing auxiliary gas and jerry cans.

A helicopter-mounted ignition and dispensing system for thermolite incendiaries was developed, and a U-shaped hose strangler, which does not slip or pinch the hose, was designed. A wooden frame for pump support was designed to allow regular maintenance to be carried out with relative ease. A styrofoam device for intake floatation was also suggested.

A 250-gallon water tank that can be installed in 12 minutes was designed. Since the tank is gauged, it was suggested that it be used on trucks with low gross vehicle weights.

In addition to these in-house equipment developments, Ontario, along with six other agencies, has been involved in the bench and field testing of metric fire hose and quick-connect metric couplings.

Several products, available commercially or developed elsewhere, were examined for potential use by Ontario. These included a pocket aerial estimator, a remote ignition device and an AGAtronics Thermovision 650.

Air Service Branch

In 1924 the Air Service was formed with the purchase of 13 HS2L flying boats. W. Roy Maxwell was appointed director. Bases and fuel caches were established at strategic points. A total of 2,500 hours was flown the first year.

The more important additions to the fleet were 16 D.H. Moth seaplanes, first purchased in 1927; Vickers Vedette amphibians, 1929; four Hamilton seaplanes, 1930; four Fairchild seaplanes, 1930; four Buhls, 1935; nine Stinson gull wings, 1937; and 15 Norseman seaplanes, purchased from 1944 to 1952.

The purchase of the first Beaver aircraft in 1948 was the beginning of a new efficiency in flying operations. The Beaver and the larger model, the Otter, were designed and built to meet Ministry requirements. The success of these aircraft in Ontario has led to their world-wide acceptance.

In spite of difficult flying conditions, only 27 aircraft have been written off. The last flying fatality occurred in May, 1968. There have been a total of 25 fatalities involving Air Service operations.

In recent years, aircraft have been lost in service at Geraldton, in 1950; Temagami in 1951; at Dryden in 1952; at Lauzon Lake in 1953; Ear Falls in 1959; Kenora in 1961; and Atikokan in 1976.

Development of aerial water bombing equipment has been carried out since 1944. The latest system is contained within the aircraft floats and incorporates a variable load feature and provision for mixing a chemical water thickener. This system was installed in 10 Otters, 27 Turbo Beavers and two Twin Otters in 1968. Seven of the Turbo Beavers have been sold.

In 1965 an aircraft modernization program was initiated with the purchase of six new Turbo Beavers. A total of 28 was acquired, replacing standard Beavers which have been sold. Three Twin Otters and two King Air have been acquired. Six CS2F Grumman Tracker aircraft were purchased from Crown Assets Corporation and converted for chemical fire bombing.

During the 1976-7 fiscal year, the Ministry fleet of 43 aircraft operated out of 16 bases, flew 17,821 hours and delivered 5,472 tons of cargo.

Twenty-two mercy and emergency flights were made to rescue ill and injured persons from isolated locations.

Engineering Services Branch

During the past fiscal year, the Branch supplied support in those aspects of Ministry programs requiring professional engineering, engineering technology and construction expertise.

Projects undertaken included reports, pre-engineering design, construction and maintenance of dams, docks, navigation locks and other hydraulic structures and facilities as well as improvements to flow channels and dredging.

Pre-Engineering and Design

Projects included dams at Hill's Lake Hatchery and Methuen Lake; docks at Ignace, Red Lake and Sioux Lookout Air Bases, at Migin, Wabatong, Kerr and Carey Lakes, at Georgina Island, and at Glenora Fisheries Research Station; and a combined vertical-slot fish pass and lamprey barrier designed for an existing dam on the Lucknow River at Port Albert.

Studies undertaken by consultants included soils investigations for the Hill's Lake Hatchery Dam, Hullett Marsh, Upper Canada Bird Sanctuary, Bronte Creek Dam and Charleston Lake Dock. A flood line study was also carried out on the lower reaches of Bronte Creek.

A design was prepared, and contract supervision supplied, for the construction of Whitedog Lake Dam, a control structure to regulate water levels in the lake for the culture of wild rice by the Whitedog Indian Band.

Construction

Water control structures were built at Hill's Lake Hatchery, Lutterworth Lake, Ten Mile Marsh and Wicksteed Lake. The latter was built under an agreement with Ontario Hydro, and costs for the dam as well as the two bridges required on the access road were paid by Ontario Hydro. Modifications, to improve operator safety, were made to Dwyer's Marsh, Canonto and Summit Lake dams.

Fixed docks were built at Ignace, Red Lake and Sioux Lookout Air Bases, at Mijin, Wabatong, Carey and Kerr Lakes, and at the Glenora Fisheries Research Station. New

floating docks were built at the Longbow and Blindfold portages and at Sioux Lookout air base.

Bridges were built at Turtle and Kenogamissi Rivers and at Furcate and Parker Creeks in support of the resource access road program; these structures were designed in-house.

Construction of the fish pass on the Lucknow River at Port Albert was started in the fall of 1976 and will be completed in 1977.

Ponds to provide fire protection and recreation were built at agreement forests in Tiny and Whitchurch Townships.

Improvements to Flow Channels

Further stream enhancement work was carried out on Wilmot Creek to improve the fishery habitat and provide better access for fishermen.

Maintenance

From inspection reports submitted by district and regional offices, maintenance of water control structures was carried out as required. Major repairs were made to the big lock, dam and docks at Port Carling; to dams at Charlton Lake, Samuel de Champlain Provincial Park and Thornbury; and to docks at Normandale, Elliot Lake, Peshu Lake and Sault Ste. Marie and South Porcupine Air Bases. Minor maintenance was carried out at 91 other structures.

Water Resources Management

Management of water levels and flows on lakes and rivers is undertaken through administration of The Lakes and Rivers Improvement Act.

A total of 195 location approvals was granted by District Offices for projects of which 152 were for dams and 42 for river diversions and river channelization projects.

Regional Offices granted a total of 89 plans and specifications approvals for 67 dams and 22 diversions and channelizations.

A total of 350 investigations was carried out on water regulation problems involving construction, operation and maintenance of private dams, river diversions and channelization.

Guidelines and criteria were published for use in administration of approvals under the Act. One inquiry was held, as provided for in the Act, for a proposed order to remove a dam in poor condition causing a potential flood hazard to downstream property.

Resource Access

A total of 5,552 miles of forest access, Ministry service, public transport, recreational access and Agreement Forest roads was maintained. This was an increase of 828 miles over the previous year.

The Ministry also shared, by agreement, the cost involved in maintaining 532 miles of private forest roads constructed by industry — an increase of 60 miles over the previous year.

A total of 146 miles of forest access roads was constructed or reconstructed under the Ministry's normal resource access program in support of the extraction of forest products from Crown Management Units.

The Northern Ontario Resources Transportation Committee funded construction and reconstruction projects involving 53 miles of road under the Committee's Direct Program. Under the Indirect Program, where costs are shared with industry partners, projects involving both the forest and mining industries were funded.

In addition, for the third consecutive year, the Committee funded winter road construction into the Indian Community of Round Lake, and provided funds to connect isolated Indian communities by snowmobile in the northwestern and northern parts of the Province.

Great Lakes Shoreline

Under an agreement with the Government of Canada, Ontario participated jointly in a survey to determine the nature and extent of shore damages and to make preliminary recommendations aimed at more effective shore management. The results of this survey, a Technical Report and accompanying Coastal Zone Atlas, were released during the past year.

A federal-provincial co-ordinating task force has been set up to implement follow-up programs resulting from the Technical Report recommendations. As part of this program, an atlas of flood and eroson-prone lands is being compiled for use as a planning aid by municipalities and federal and provincial agencies. A shoreland management study is under way along the Lake Erie shoreline in Essex County to develop methods of assessing alternative shoreland management policies.

A continuing public awareness program is in progress with workshops being held with municipalities, conservation authorities and professional organizations to increase awareness of Great Lakes shoreline problems and to encourage the use of good shoreland management policies.

Fleet and Mechanical Equipment

The Ministry fleet increased by 61 vehicles, 16 snowmobiles, two trail bikes and four tractors and all-terrain vehicles. This raised the fleet fixed complement to 1,682 vehicles, 525 snowmobiles, 308 tractors and all-terrain vehicles, and 855 boat and equipment trailers.

The effective size of the operating fleet is increased during the busy summer months by taking delivery of new vehicles in the spring, but holding vehicles to be replaced until fall. Replacement equipment purchased included 271 vehicles, 63 snowmobiles and 25 tractors.

Finance and Administration Division

Legal Services Branch

During the fiscal year ending March 31, 1977, amendments were made to The Provincial Parks Act (by Statutes of Ontario 1976, chapter 56).

Seventy-six regulations were made under the authority of Acts administered by the Ministry and 430 Orders-in-Council were prepared and processed through the Branch during the fiscal year.

One Federal-Provincial co-operative agreement relating to projects for the more efficient exploitation of, exploration for and development of, fishery resources in Ontario was entered into during the fiscal year.

Administrative Services Branch

The Branch is a support group offering the administrative services that lie outside the personnel and financial fields.

Services Section

Office Management

This Unit is responsible for the design, standardization, issuance and replacement of uniforms. The existing 23 uniform types are being reduced in number and redesigned. The new uniforms will be phased in over the next two years. Other responsibilities include the following:

The continual updating of the Ministry's listing in telephone directories across the Province;

Preparation of information for the government telephone directory;

The issuance of 1,500 telephone credit cards;

The issuance of identification cards (five types) and emergency pass cards to Ministry staff;

All Branch personnel and accounting functions;

The distribution of all government manuals and their revisions, as well as the Ministry's policy and procedure directives and key personnel directory;

The equipment inventory control system and the main office equipment inventory control records;

The copy centre which provides in-house printing for main office and produced more than 2.2 million copies during the year; and

The management of 205,000 active Crown Land files and the several incoming documents that necessitate the recording of 80 entries daily on the cross-reference index system, and the retrieval of 200 files daily.

Public Service Centre

The Centre is responsible for the sale and distribution of Ministry publications including geological maps, reports, circulars, technical mining publications, geographical maps, forest resources inventory maps, lake contour maps and the Provincial Topographic map series as well as aerial photographs in contact or enlarged format. The National Topographic map series and publications of the Ministry of Transportation and Communications are also available.

The Centre sold or distributed 308,000 maps and aerial photographs during the year; served 22,000 cash customers; and answered 17,000 items of correspondence and thousands of telephone enquiries.

Hunting and fishing licences will be sold at the Centre in the 1978-9 fiscal year.

A Natural Resources information booth was opened on the main floor of the Whitney Block in December, 1976. It provides information to the public on the Ministry and also handles general government enquiries. Contact is by personal call and telephone.

Data Processing Unit

This Unit accepts for keying the source documents for the Ministry's production data processing systems; schedules, submits and receives computer runs and sees that the desired reports are distributed to user branches; maintains Ministry magnetic tape library; administers the Ministry's magnetic tapes retained in the library of the Central Computing Branch; maintains sufficient systems documentation to enable a contract programmer to carry out maintenance or minor revisions when requested by user branches; assists user branches in identifying computer problems and suggesting means of rectifying such problems; and keys data from source documents onto magnetic tape or tab cards in a predetermined format. The cards and/or tapes are interpreted by the Ministry's computer programs to produce the desired reports. Over two million records are keyed annually.

Supply Section

Purchasing

This Unit is responsible for the co-ordination of the Ministry's procurement program. A wide variety of goods and services are purchased to equip the different areas of the Ministry — lab equipment, furniture and furnishings, clothing, chemicals, etc. Where feasible, bulk purchase and standing agreements are negotiated for wide use.

Last year 9,700 purchase orders were issued from this Unit. Approximately 15,000 requisitions were processed, resulting in the generation of purchase orders and Central Stationery, Telephone Services, Central Duplicating, Central Pharmacy, Central Mailing, Government Services and Print Processing Requisitions.

Central Supply

Central Supply Warehouse received a total of 330 tons of supplies and equipment during the year. Shipments of 289 tons were made by express, freight and transport in addition to mail and internal supply to main office.

A total of 1,908,000 Fish and Wildlife Licences and 1,339,000 Park Permits were distributed to field offices and 4,000 private agents who sell them to the public. These Licences and Permits (about 50 types) were distributed by 12,725 invoices.

The Warehouse also handled storage and distribution of Parks and Conservation Officer uniforms in addition to other Ministry apparel.

The Stockroom in the Whitney Block handled distribution of goods throughout the building.

The Whiteprint Copy Centre prints maps for distribution to the public. Copies totalled 39,350 in the year.

Records and Forms Management Section

The Section is the operating arm of the Ministry Records Management Committee. The Committee ensures that the Ministry complies with The Manual of Administration Directive and The Archive Act and that the goals and objectives of the Ministry agree with those of the government as a whole.

Records Management Unit

The Unit is responsible for maintaining an accurate inventory of all records, records equipment and microrecording equipment; control over the initiation, maintenance, protection, retention and disposition of all Ministry records; conducting feasibility studies regarding all microrecord systems and submitting all proposals to the Ministry Records Management Committee; conducting training seminars for the Ministry in all aspects of records management; and developing Ministry file classification plans.

Forms Management Unit

The Unit is responsible for establishing, maintaining and reviewing an inventory of Ministry forms; reviewing and

approving all requests for forms printing; improvement in design of necessary forms by adherence to Ministry and Government-wide design standards; providing forms analysis and design service to users to ensure that Ministry forms will accomplish necessary operations in the most efficient and economical manner to achieve the desired results; conducting in-depth analysis of all Ministry forms to simplify the flow of each form in use in a system, and to simplify the preparation and handling of the form by removing all superfluous and redundant data with emphasis on consolidation, standardization and elimination; providing technical guidance to form originators; and conducting training seminars in forms management and design for Ministry personnel.

Accommodation Section

The Section co-ordinates the provision of accommodation for the Ministry and is the official liaison with the Ministry of Government Services for accommodation matters.

The Ministry Accommodation Plan, which is submitted to Management Board to obtain funds via the Ministry of Government Services for capital, leasing and accommodation alteration projects, is prepared yearly.

The Section supervises the development and implementation of approved projects, endeavours to facilitate communication with field offices, and ensures that the immediate, medium and long-range accommodation objectives of the Ministry are clear.

The construction projects completed through the Section during the past year included Atikokan District Office, Dryden Service Centre, Thunder Bay Service Centre, Dorion Hatchery Sub-Station, Cochrane District Office Addition and Hearst District Office Addition. The significant leasing projects arranged through the Section were the Richmond Hill Regional Office Addition, Napanee District Office Addition and Wingham District Office Addition. The Section also organized the relocation of Geological Branch to 77 Grenville Street and Dryden District Office to the new Dryden Ontario Government Building.

Internal Audit Branch

Internal Audit Branch was established as a branch of Finance and Administration Division on September 1, 1976. The branch director reports directly to the executive director of the Division.

The Branch is divided into four Sections under managers located as follows:

Northwestern Region Office
Northeastern Region Office
Maple District Office
Main Office.

The principal objective of the Branch is to provide independent evaluations and objective reports to management concerning accountability for activities at all working levels.

During the 1976-7 fiscal year, the Branch produced 96 such reports in addition to other activities.

Financial Management Branch

The Branch provides accounting and financial administrative support services for the Ministry. It maintains records of revenue and expenditure, prepares financial statements, and supervises and co-ordinates the accounting functions of the divisional and field offices. Its responsibilities include budget preparation and control, development of accounting and costing systems, financial and cost analyses, pre-audit controls and procedures, and financial liaison with Management Board of Cabinet, the Provincial Auditor, and other ministries and agencies.

Financial Report

Statement of Revenue *for year ended March 31, 1977* — *Statement No. 1*

MINISTRY ADMINISTRATION			
Recovery of Prior Year's Expenditures		$ 9,633	
Sale of Maps, Publications, etc.		447,085	
Rentals – Ministry Houses		352,369	$ 809,087
LAND MANAGEMENT			
Recovery of Prior Year's Expenditures			
Land Acquisition	$ 159,515		
Conservation Authorities	55,900		
Regional Development Projects	10,667		
Construction and Rehabilitation of Dams	9,970		
Remote Sensing	8,440		
Miscellaneous	5,274	$ 249,766	
Taxation – Mines Acreage Tax		610,859	
Royalties – Forest Protection Charges*		1,883,792	
Fees and Licences – Mines		502,821	
Public Domain			
Leasing and Licensing of Lands	$ 1,070,768		
Gas and Mining Leases	656,009	1,726,777	
Sales			
Land and Buildings	$ 1,039,174		
Recovery Fire Fighting Costs	298,653		
Equipment	283,971		
Sundry Sales	22,759	1,644,557	

Reimbursements of Expenditures – Government of Canada			
ARDA – Conservation Authorities	$ 319,681		
Dams, Reservoirs and Channel Improvements	5,626	325,307	$ 6,943,879
OUTDOOR RECREATION			
Recovery of Prior Year's Expenditures			
Nanticoke Agreement	$ 23,379		
Miscellaneous	3,468	$ 26,847	
Recreation Areas			
Park Entrance and Camping Fees	$ 4,519,672		
Park Concessions	221,371		
Park Miscellaneous	9,574	4,750,617	
Fish and Wildlife			
Hunting and Fishing Licences	$10,908,279		
Royalties	432,988		
Confiscated Articles	60,173		
Miscellaneous – Fish and Wildlife	113,787	11,515,227	
St. Lawrence Parks			
Fees	$ 1,398,060		
Sales	1,168,350		
Facilities	95,672		
Miscellaneous	11,540	2,673,622	
Frost Centre			
Facilities		257,117	
Reimbursements of Expenditures – Government of Canada			
ARDA – Extension of Redevelopment Area Parks	$ 212,460		
Rideau and Trent Canal Waterways and Adjacent Land Use Management	28,601	241,061	19,464,491
RESOURCE DEVELOPMENT			
Renewable Resource Development			
Recovery of Prior Year's Expenditures			
Co-operative Fisheries Management Agreement	$ 8,600		
Miscellaneous	2,564	$ 11,164	
Forest Management			
Stumpage**	$25,923,527		
Forest Products	206,150		
Stock Production	174,539		
Miscellaneous Timber	91,609	26,395,825	
Water Management			
Royalties – Water Power		12,988,363	
Reimbursements of Expenditures – Government of Canada			
Forest Management			
ARDA – Private Land Forestry	$ 250,000		
ARDA – Forest Stand Improvement	156,922		
Commercial Fish and Fur Resource Development Agreement	261,205		
Freshwater Fish Marketing Agreement	4,340		
Fisheries Industrial Development Agreement	654	673,121	$ 40,068,473
NON-RENEWABLE RESOURCE DEVELOPMENT			
Mineral Management			
Recovery of Prior Year's Expenditures			
Mine Rescue Stations – Recovery of Operational Costs		$ 73,407	
Mining Tax		41,041,961	
Royalties		819,967	
Fees, Licences		98,162	
Miscellaneous		3,749	42,037,246
MISCELLANEOUS			
Recovery of Prior Year's Expenditures			22,706
Total Revenue			$109,345,882

**Includes Forest Management Charges.*
***Includes Logging Roads Construction Costs.*

Estimated Allocation of Expenditures to Main Services *for year ended March 31, 1977* *Statement No. 2*

PROGRAMS	Activity Total	Sub-Activity Total	Land Management	Environ-mental Protection	Parks	Fish and Wildlife	Forest Management	Mineral Management	Conservation Authorities	Northern Affairs
	$	$	$	$	$	$	$	$	$	$
MINISTRY ADMINISTRATION (Pro-rated by Operating Activities)										
Main Office	2,665,548	2,665,548	224,173	545,105	582,422	431,552	681,847	168,729	31,720	
Field Offices	10,113,371	10,113,371	850,535	2,068,184	2,209,772	1,637,355	2,587,000	640,176	120,349	
Financial Management	2,621,272	2,621,272	220,449	536,050	572,748	424,384	670,521	165,927	31,193	
Administrative Services	2,211,033	2,211,033	185,948	452,156	483,111	357,966	565,582	139,959	26,311	
Information Services	2,320,315	2,320,315	195,138	474,504	506,989	375,659	593,537	146,876	27,612	
Personnel	793,166	793,166	66,705	162,202	173,307	128,414	202,892	50,207	9,439	
Junior Rangers	2,975,264	2,975,264	297,526	510,258	1,237,710	277,592	585,830	42,546	23,802	
Northern Affairs	1,432,577	1,432,577								1,432,577
Youth Corps (Experience '76)	4,464,668	4,464,668	437,992	217,246	724,487	495,991	551,240	55,749	1,981,963	
	29,597,214	29,597,214	2,478,466	4,965,705	6,490,546	4,128,913	6,438,449	1,410,169	2,252,389	1,432,577
LAND MANAGEMENT										
Water Control and Engineering	9,905,224									
Administration and Hydraulic and Special Studies		3,274,348	723,631			2,200,362	350,355			
Equipment and Plant Operation		5,138,555	1,135,621			3,453,109	549,825			
Recreation Oriented Water Facilities		999,327	220,851			671,548	106,928			
Flood and Erosion Control Facilities		32,058	7,085			21,543	3,430			
Ministry Service Facilities		442,594	97,813			297,423	47,358			
Flood Emergency Planning		18,342	4,053			12,326	1,963			
Forest Protection	14,101,284									
Communications		2,126,321	178,824	434,833	464,601	344,251	543,913	134,596	25,303	
Fire Control		11,974,963		11,974,963						
Air Service	3,883,999	3,883,999	240,419	1,964,915	169,731	1,116,261	342,569	40,782	9,322	
Extra Fire Fighting	21,586,554	21,586,554		21,586,554						
Resource Access	15,951,595									
Forest and Logging Access Roads		4,773,052	121,645	194,121	159,762	262,851	3,840,499	194,174		
Crown Land Subdivision and Ministry Service Roads		310,979	75,941	54,048	51,840	72,583	55,572	995		
Recreation Access, Public Transport and Agreement Roads		1,129,088	180,767	113,925	281,482	228,527	306,096	18,291		
Northern Ontario Resources Transportation Roads		3,942,606	3,114,659				804,291	23,656		
Moosonee Hydro Line		5,795,870	5,795,870							
Land and Water Classification	7,389,072									
Activity Support		356,850	187,382			1,499	83,539	76,401	8,029	
Surveys and Mapping		4,044,222	1,524,998				855,275	1,505,370	158,579	
Inventory		1,214,000	393,438			29,347	791,215			
Land Use Co-ordination		1,774,000	1,774,000							

Land, Water and Mineral Title Administration	9,151,811									
Activity Support		454,088	370,445					83,643		
Public and Mining Lands		5,614,523	4,580,544					1,033,979		
Land Acquisition Administration		562,283	9,334		495,821	50,887	6,241			
Land Acquisitions		2,520,917	41,987		2,222,948	228,046	27,936			
Conservation Authorities	25,832,472									
Conservation Service		1,900,459							1,900,459	
Grants		23,932,013							23,932,013	
	107,802,011	107,802,011	20,779,307	36,323,359	3,846,185	8,990,563	8,717,005	3,111,887	26,033,705	
OUTDOOR RECREATION										
Recreational Areas	30,322,548									
Administration		938,558			938,558					
Crown Land Recreation Management and Extension		2,903,003			2,903,003					
Park Management		16,482,113			16,482,113					
Park Capital		9,998,874			9,998,874					
Fish and Wildlife	17,925,362									
Wildlife Management and Research		7,094,236				7,094,236				
Fisheries Management and Research		10,831,126				10,831,126				
St. Lawrence Parks Commission	6,858,440	6,858,440			6,858,440					
	55,106,350	55,106,350			37,180,988	17,925,362				
RESOURCE PRODUCTS										
Mineral Management	8,129,696									
Administration		328,081						328,081		
Policy Analysis and Taxation		2,015,212						2,015,212		
Mineral Analysis and Service		782,164						782,164		
Geological Assessment		5,004,239						5,004,239		
Forest Management	35,726,765									
Administration		6,820,101					6,820,101			
Silviculture Operations and Support		20,806,569					20,806,569			
Timber Management		8,100,095					8,100,095			
Commercial Fish and Fur	2,065,537	2,065,537				2,065,537				
Managed Forest Tax Reduction Grants	404,695	404,695					404,695			
Algonquin Forestry Authority	610,000	610,000					610,000			
	46,936,693	46,936,693				2,065,537	36,741,460	8,129,696		
TOTAL EXPENDITURE	239,442,268	239,442,268	23,257,773	41,289,064	47,517,719	33,110,375	51,896,914	12,651,752	28,286,094	1,432,577
Percentage of Total		100%	9.71%	17.24%	19.85%	13.83%	21.68%	5.28%	11.81%	.60%

Personnel Branch

Total Staff

March 31, 1977	Regular	Probationary	Unclassified	Total
Main Office	1,094	78	270	1,442
Field Offices	2,509	224	1,833	4,566
Total	3,603	302	2,103	6,008

Total Complement of Positions	3,953
Vacancies in Complement	48
Regular and Probationary Staff	3,905
New Employees Hired 1976-7	234
Junior Rangers (Summer, 1976)	1,618

Professional Staff

March 31, 1977	
Biologists	114
Economists	8
Engineers	31
Foresters	289
Geologists	56
Mining Engineers	35
Park Planners	24
Scientists	49
Miscellaneous	73
Total	679
Resource Technicians	1,507
Licensed Scalers	1,333

Staff Turnover

March 31, 1977	
Deceased	18
Transferred	112
Released	2
Resigned	131
Dismissed	1
Retired	84
Miscellaneous	7
Total	355

*Ratio of separations to total of regular and probationary staff at March 31, 1977, was 11.0%.

Administration Staff, March 31, 1977

DEPUTY MINISTER

Dr. J. K. Reynolds

ASSISTANT DEPUTY MINISTERS

L. Ringham, *Northern Ontario*
W. T. Foster, *Southern Ontario*
A. J. Herridge, *Resources & Recreation*
J. W. Giles, *Lands and Water*

EXECUTIVE DIRECTORS

J. W. Lockwood, *Division of Forests*
G. A. Jewett, *Division of Mines*
K. K. Irizawa, *Division of Fish and Wildlife*
L. H. Eckel, *Division of Parks*
J. W. Keenan, *Division of Lands*
W. G. Cleaveley, *Field Services Division*
G. D. Spry, *Finance and Administration Division*

REGIONAL DIRECTORS

G. A. McCormack, *Northwestern (Kenora)*
R. A. Baxter, *North Central (Thunder Bay)*
J. R. Oatway, *Northern (Cochrane)*
J. M. Hughes, *Northeastern (Sault Ste. Marie)*
J. S. Ball, *Algonquin (Huntsville)*
T. W. Hueston, *Eastern (Kemptville)*
R. M. Dixon, *Central (Richmond Hill)*
W. H. Charlton, *Southwestern (London)*

DIRECTORS

W. Fullerton, *Forest Management Branch*
D. P. Drysdale, *Timber Sales Branch*
D. H. Burton, *Forest Research Branch*
Dr. E. G. Pye, *Geological Branch*
Dr. T. P. Mohide, *Mineral Resources Branch*
D. A. Moddle, *Mineral Research Branch*
D. R. Johnston, *Wildlife Branch*
K. H. Loftus, *Fisheries Branch*
J. D. Roseborough, *Fish & Wildlife Research Branch*
R. H. Hambly, *Park Management Branch*
R. J. Vrancart, *Park Planning Branch*
J. McGinn, *Lands Administration Branch*
R. J. Burgar, *Land Use Co-ordination Branch*
R. G. Code, *Surveys and Mapping Branch*
W. L. Sleeman, *Forest Fire Control Branch*
T. C. Cooke, *Air Service Branch*
S. B. Panting, *Engineering Services Branch*
A. H. Peacock, *Conservation Authorities Branch*
R. V. Scott, *Northern Affairs Branch*
A. C. Goddard, *Financial Management Branch*
R. A. Groves, *Internal Audit Branch*
H. B. Farrant, *Personnel Branch*
J. A. Queen, *Administrative Services Branch*
F. Moritsugu, *Information Branch*
Miss M. Mogford, *Policy Co-ordination Secretariat*
G. A. Hamilton, *Leslie M. Frost Natural Resources Centre*

DISTRICT MANAGERS

W. D. Adlam, *Ottawa District*
R. P. Alton, *Wawa District*
E. N. Arbuckle, *Espanola District*
J. R. Bailey, *Lanark District*
R. G. Bailey, *Napanee District*
M. P. Barker, *Atikokan District*
L. L. Bronson, *Pembroke District*
W. R. Catton, *Cambridge District*
J. K. Cleaveley, *Geraldton District*
D. J. D'Agostini, *Fort Frances District*
P. R. Davidson, *Aylmer District*
J. E. Dickenson, *Niagara District*
C. Dionne, *Gogama District*
T. E. Dodds, *Ignace District*
I. B. Earl, *Maple District*
C. E. Emblin, *Hearst District*
H. P. Endress, *Dryden District*
E. W. Everley, *Red Lake District*
D. R. Fortner, *Chatham District*
O. Goodman, *Bancroft District*
C. R. Gray, *Lindsay District*
L. J. Haas, *Terrace Bay District*
D. L. Hagar, *Blind River District*
J. E. Hamilton, *Thunder Bay District*
G. O. Koistinen, *Nipigon District*
R. G. Lightheart, *Kapuskasing District*
W. J. Lovering, *Owen Sound District*
W. D. Mansell, *Wingham District*
R. B. McGee, *Simcoe District*
D. B. McGregor, *Kenora District*
D. E. McHale, *Sudbury District*
J. G. Minor, *Kirkland Lake District*
J. R. Morin, *Cornwall District*
D. J. O'Grady, *White River District*
A. F. Papineau, *Timmins District*
W. R. Peck, *Parry Sound District*
C. E. Perrie, *Sioux Lookout District*
E. Rogers, *North Bay District*
J. E. Rumney, *Temagami District*
W. D. Schafer, *Huronia District*
J. H. Sellers, *Sault Ste. Marie District*
J. A. Simpson, *Algonquin Park District*

J. M. Small, *Chapleau District*
R. W. Tippett, *Bracebridge District*
R. H. Trotter, *Brockville District*
D. D. White, *Minden District*
G. A. Wright, *Cochrane District*
W. Vonk, *Tweed District*
(Vacant), *Moosonee District*

Equal Opportunity Program

The Women's Co-ordinator for the Ministry of Natural Resources was appointed on March 18, 1975. Career Development Workshops for women were held across the Province and attended by 238 female employees in the 1975-6 fiscal year. A follow-up study on the workshops was distributed in April, 1976.

The Affirmative Action Plan for the Ministry was approved and published in March, 1976.

A course on the Plan was prepared by the Special Projects Officer for inclusion in the Personnel Management course for supervisors and managers, with the officer or the Women's Co-ordinator conducting or participating in the course as requested.

During July and August, 1976, the Women's Co-ordinator and Special Projects Officer visited 480 female Junior Rangers in summer camps and conducted 21 sessions on the Equal Opportunity Program. The 17-year-old Junior Rangers were informed of the equal opportunity policy of the Government of Ontario and of the non-traditional job areas open to women, especially in the Ministry.

Hirings, Promotions

Women on unclassified staff made impressive progress with 70 females being hired in resource technician jobs and 38 females in such professional positions as forester, biologist and planner. This trend has not been reflected in the hiring of women on classified staff, due in all probability to the number and calibre of men holding equal qualification but longer and more varied work experience. Eight professional and five technica jobs were held by women in complement positions.

Women made some headway in the General Clerk 5 and 6 levels. Of the 15 positions open during the second six months of the fiscal year, three were filled by female employees.

Action Committees

Affirmative Action Committees have been fully operative in Northern, Northeastern and Eastern Regions since 1976 and committee meetings have been held regularly.

Ministry-wide committees were established by March, 1977, with 65 women members from across the Province being appointed to represent the Ministry's 708 female employees.

The women members elected a representative for each Region and Division. These 17 representatives will act as spokespersons for the group and be responsible for liaison with the Women's Co-ordinator.

Information Branch

The news service to the media was improved and extended during the year to step up the flow of information from the Ministry to the public. Field information services were co-ordinated with main office output by Information and Liaison Section and news releases were delivered almost daily to major news outlets.

Additional material was supplied on request to editors and broadcasters.

Material was mailed to 45,000 persons who requested information on natural resources or outdoor recreation.

Ontario Outdoors, a public service radio series, was supplied regularly to 55 Ontario stations and supplemented with *Touch Wood,* a radio series of brief items supporting the work of conservation officers in the field.

Staff support and guest personnel were provided for outdoor-oriented TV programs in northern Ontario and Metropolitan Toronto.

Outdoors Offbeat

Outdoors Offbeat, a news feature service, has replaced the Ministry newsletter because of its success with the media since its first release in typewritten format in December, 1975. During the past year, it was converted to standard newspaper typography in a form that is used directly in common printing processes. Each issue is accompanied by photos that are easily adapted to printing processes.

Outdoors Offbeat is mailed at intervals to 1,300 outlets including daily and weekly newspapers, selected periodicals, outdoor writers and radio and TV stations.

Publications

The Ministry published 36 booklets, nine folders and 10 leaflets or small folders of general interest during the year. These totals do not include scientific papers and technical reports and a number of leaflets on Provincial Parks and other installations and services. New publications of branches and field offices included the following:

About Bait-Fish in Ontario ($2.00)
Algonquin Forest Authority Annual Report
Amethyst Deposits of Ontario ($2.00)
Coping with the great Lakes (co-op with Canada Environment)
The Distribution and Characteristics of Ontario Lake Trout Lakes ($2.00)
Environment Education (co-op with Ministries of Environment, Health and Agriculture & Food)
Evaluation of the Forest Management Activity in Ontario (by Professor K. A. Armson)
Fish Ontario ($1.00)
How to Qualify for a Hunting Licence in Ontario
Isolated Communities Assistance Fund
Lake Temagami Plan for Land Use and Recreation Development
The Leslie M. Frost Natural Resources Centre
Ontario Commercial Fishery Statistics on Landings, 1971-5
Ontario's Public Land — A Guide to Its Use
Planning for Flood Emergencies
Procedure in Reporting Workmen's Compensation Claims
Tomorrow is What You Make It
Winter Fires.

Exhibits

The Branch continued to upgrade the Ministry style in exhibits during the year and prepared and managed exhibits at six major shows and exhibitions — Canadian National Sportsmen's Show, Canadian National Exhibition, Central Canada Exhibition, Royal Winter Fair, Lakehead Exhibition and International Plowing Match. Exhibits were also prepared for 30 smaller fairs and shows and a number of these were managed by field offices.

A-V and Films

In its first full year of operation, Audio-Visual and Films Section produced seven slide-tape programs and provided staff expertise and facilities to assist Regional Offices in the preparation of audio-visual presentations.

Polar Bear Provincial Park, a 16 mm color motion picture produced by Section staff, won a citation for creative excellence in international competition at the Industrial Film Festival in Chicago, U.S.A.

Section photographers completed more than 200 projects for the Ministry and produced 5,000 photographic prints and color slides.

A video-tape playback and TV program monitoring service was introduced and a library of television programs was established.

A cross-filing index system was introduced in the Photo Library. During the year, the library supplied Ministry offices with 1,400 prints and 2,600 color slides.

The Motion Picture Library loaned 2,100 films to Ministry offices and educational groups. Eight films were added to the library, bringing the number of titles to 417.

Safety Training

The staff of Safety Programme Development Section co-operated with field office staff during the past year in investigations of accidents and injuries, safety audits of Ministry buildings and facilities, power tool inspections and safety workshops on axes, chainsaws and snowmobiles. The following numbers of staff were trained as noted:

Driver training and testing	2,124
Defensive driving	876
First Aid	2,116
Other safety courses	2,180
Safety workshops	360
Safety inspections	977
Safety investigations	222
Off-the-job training (to public)	518

Central Region achieved an injury frequency rate of 11.5, the lowest in the Ministry during the past year.

Under the hunter safety training program, 26,247 new hunters were trained in 1976 by 991 instructors certified by the Ministry, bringing to 397,804 the number of hunters trained in Ontario since the program began in 1957.

Northern Affairs Branch

Towards the end of the year, the Government announced the forthcoming transfer of Northern Affairs Branch to the Ministry of Northern Affairs when it would be formally established early in the 1977-8 year. As the transfer was expected to involve a considerable degree of internal reorganization, it is pertinent to review the progress of the Branch from its establishment in 1971 to date.

Except for the high figure of 1975 which reflects the extra work load placed on the Branch by a postal strike, the number of transactions handled by the Branch increased annually as follows:

1971	58,492
1972	80,958
1973	132,975
1974	164,851
1975	257,248
1976	221,848

Branch locations developed since 1971 to include a small co-ordinating office in Toronto and 144 locations in the north — three regional offices, 24 "storefront" offices, 35 satellite offices and 82 contact points.

Northern Affairs Officers hold letters of authority under several Acts administered by other Ministries and in many cases operate across ministerial lines. They perform specific functions and provide services and facilities for other agencies.

Northern Affairs offices also serve the public as "government book stores" and distribute about 10,000 publications a month.

Program Analysis Office

The Program Analysis Office is responsible for co-ordinating the program planning and program accountability aspects of the Ministry's management system and serves as the Ministry's main contact with the Management Board Secretariat. Its accomplishments during the past fiscal year are summarized below.

Guidelines, support and conciliation of reports were provided for the assigning of output targets and associated dollars in the spring of 1976, the mid-year progress review in the fall, and the year-end review in early spring, 1977.

Managing by Results commitments with Management Board were introduced for 41 per cent of the Ministry's budget covering 12 program areas. The objective is to have 100 per cent of the Ministry's budget on MBR by 1978-9.

The Office co-ordinated the internal review and liaison with the Management Board Secretariat and subsequent monitoring of Management Board decisions on 240 Ministry submissions to the Board during the year.

Several projects of an analytical nature were initiated during the year. Examples included an evaluation of the use of Tracker aircraft in the initial attack on forest fires, a study of the Temiskaming Testing Laboratory and a review of the utilization of vehicles by Field units.

The Office co-ordinated the preparation of the Ministry's 1977-8 Estimates Submission and the Minister's Briefing Book on the Estimates for 1976-7.

Additional responsibilities included representation on committees involving a number of Ministry operations.

Policy Co-Ordination Secretariat

The Secretariat assists the Deputy Minister and his staff in co-ordinating policy planning by the following:

Providing co-ordination, integration and communication services with regard to policy planning to the various Divisions and Regions to assist them in achieving the Ministry's objectives;

Supporting the production of new policy initiatives in conjunction with the relevant Divisional and Regional Staff;

Providing support, advice and information to the Divisions and Regions in assessing long-range policy needs and directions in the context of the Ministry's mandate and government objectives;

Ensuring the widest and earliest possible multi-functional consideration of policy proposals being developed within the Ministry;

Ensuring consideration of the interministerial and intergovernmental implications of policy proposals being developed within the Ministry;

Ensuring the necessary liaison with Cabinet and its Committees, and with other Ministries; and

Undertaking special policy co-ordination assignments at the request of the Deputy Minister or members of his staff.

The Mining and Lands Commissioner

The Mining and Lands Commissioner exercises judicial, quasi-judicial and administrative powers and duties under The Beach Protection Act, The Mining Act and The Mining Tax Act, 1972, and regulations made under The Ministry of Natural Resources Act, 1972, assigning powers and duties of the Minister to the Commissioner.

Orders and judgments issued by the tribunal during the fiscal year were as follows:

869 orders extending time for performing work or applying and paying for leases;

31 orders authorizing special renewal of licences; and

61 miscellaneous orders and judgments.

The total number of orders was 961.

The revenue derived from filing extension orders was as follows:

8,687 Claims, Prior to Default	$43,435.00
612 Claims, Relief from Forfeiture	6,120.00
Total	$49,555.00

Sittings were held under The Mining Act at Kirkland Lake, Sudbury, Thunder Bay, Timmins and Toronto and under The Conservation Authorities Act at Barrie, Hamilton, London, Toronto and Waterloo. An inquiry under The Lakes and Rivers Improvement Act was held at Belleville.

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Ontario

Minister of Natural Resources

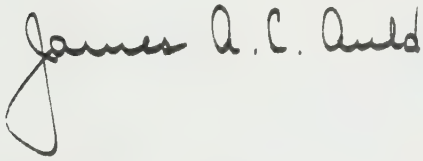
Annual Report
1978

Annual Report

of the Minister of Natural Resources
of the Province of Ontario
for the fiscal year ending March 31, 1978
$1.00

TO HER HONOUR
The Lieutenant-Governor
of the Province of Ontario

MAY IT PLEASE YOUR HONOUR
The undersigned begs respectfully to present to your Honour the Annual Report of the Ministry of Natural Resources for the fiscal year beginning April 1, 1977, and ending March 31, 1978.



JAMES A. C. AULD
Minister

Ontario

Ministry of
Natural
Resources

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**Related information of interest is reported in Statistics, 1978.*

Goal

The goal of the Ministry of Natural Resources is defined as follows:

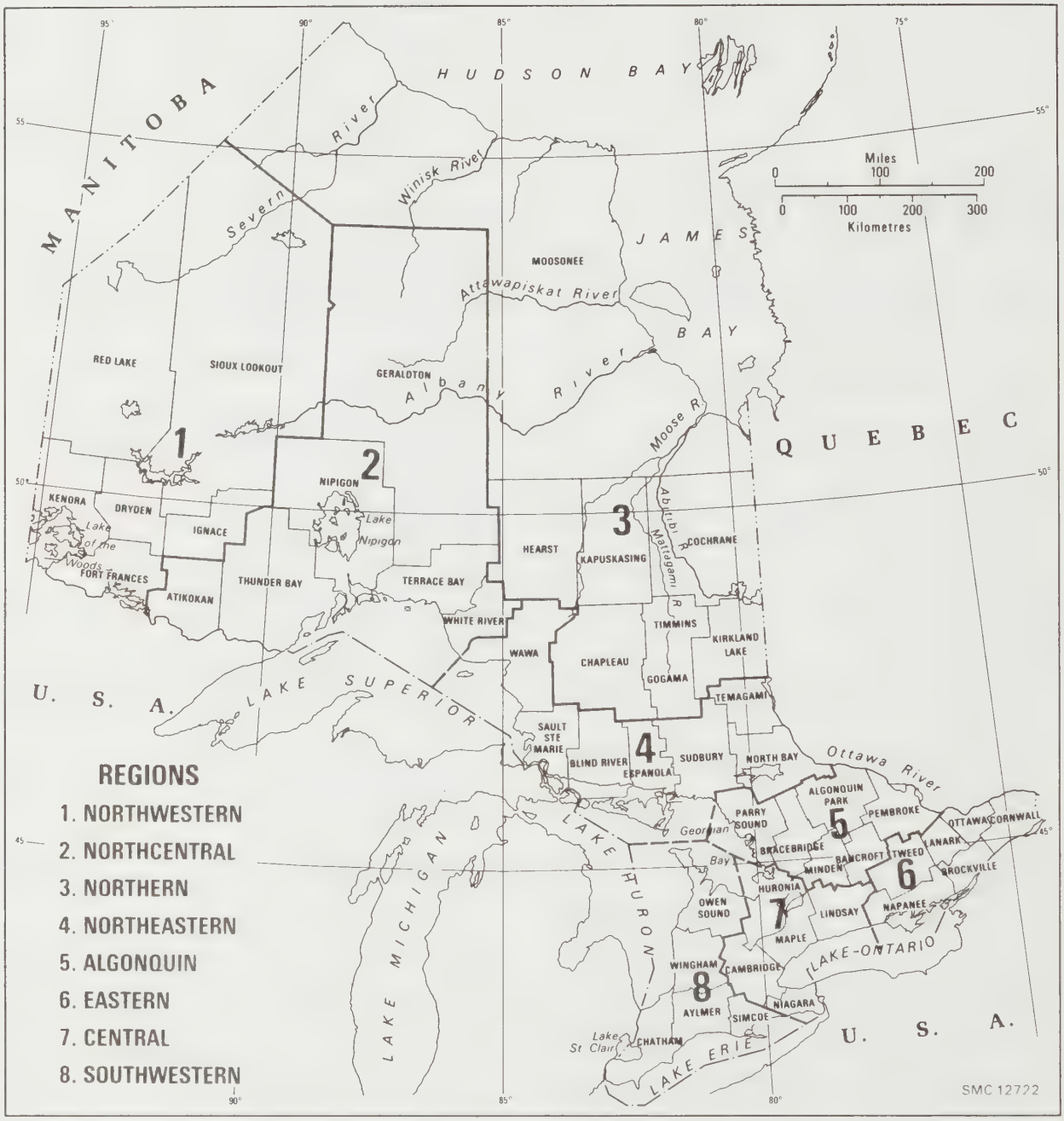
"To provide from Crown lands and waters, and to encourage on private lands and waters, a continuing combination of resource development, outdoor recreation and quality environment most consistent with the social and economic well-being of the people of Ontario."

Highlights of the fiscal year ended March 31, 1978

- The first report on heat loss and insulation performance, as interpreted from thermography, was presented to householders in Lindsay by the Ontario Centre for Remote Sensing.
- A total of 560 million cubic feet of wood was harvested on Crown lands; the stumpage value was $32 million.
- Ontario's forests were planted with 48 million trees raised in Ministry nurseries.
- On Crown lands, 381,521 acres of forests received silvicultural treatment and an additional 115,082 acres were marked for regeneration and tending.
- Agreements with private landowners under The Woodlands Improvement Act increased by 843 to 6,217 bringing 277,874 acres under agreement.
- The forests managed under agreements for municipalities, Conservation Authorities and the Government of Canada increased by 3,186 acres to 266,483 acres under The Forestry Act.
- The Ministry maintained 5,608 miles of forest access roads and shared in the maintenance of 434 miles of private forest roads.
- The Ontario Geological Survey sent out 48 field parties in 1977 to map and record rock formations and geological environments in selected areas.
- Government payments under the Mineral Exploration Assistance Program amounted to $445,863, bringing the total payments since 1971 to $2,547,855.
- The number of provincial parks increased by four to 126 with the opening of Murphys Point, a recreational park, and three nature reserves – East Sister Island, Ojibway Prairie and Peters Woods.
- Visitors to provincial parks numbered 10,431,166 in 1977 and nearly one in five participated in the activities of the interpretive program. Campers in the parks numbered 1,371,039.
- The Ministry managed 15,000 miles of canoe routes in provincial parks and on Crown lands.
- Under the winter trails recreation program, $500,000 was made available in grants to clubs and agencies to improve the grooming on more than 8,000 miles of snowmobile and ski trails.
- About 1,400 water access points were maintained on public land for boaters.
- The Ontario Trails Council received 352 briefs from the public during its two years of activity. The Council's final report presented 90 recommendations to the Minister of Natural Resources.
- A total of 636,120 fishing licences was sold to non-residents in 1977.
- The commercial fish harvest in Ontario waters in 1977 was 51.8 million pounds, 6.7 million pounds larger than in 1976. The ex-vessel value was $14.5 million, up $2.0 million.
- Ontario waters were stocked with 8.3 million fish and 7.7 million fish eggs.
- In a continuing inventory, 681 lakes (300,000 ha) and streams (300 km) were surveyed in 1977.
- A total of 560,834 hunting licences was sold to Ontario residents and 29,095 to non-residents in 1977.
- A total of 32,126 new hunters was trained in 1977, bringing to 452,298 the number of hunters trained in Ontario since the hunter safety training program began in 1957.
- The moose population appeared to be stabilizing at about 80,000 animals south of the 11th base line. Standards and guidelines for moose habitat management were completed.
- A program to produce a breeding population of wild Canada geese in southern Ontario has increased the flocks to 20,000 geese.
- The wild fur pelts taken by 13,775 Ontario trappers in 1977 were valued at more than $11 million.
- Acting under both provincial and federal legislation, Conservation Officers took actions that resulted in 6,376 seizures and 7,166 convictions.
- A total of 12,342 acres of private land was acquired for government purposes, bringing the acquisition since 1962 to 625,000 acres.
- Field offices were granted approvals for 313 water control projects.
- Grants to Conservation Authorities amounted to $27.5 million under The Conservation Authorities Act.
- Forest Fire Control and Air Service Branches were combined to form the Aviation and Fire Management Centre, established in Sault Ste. Marie.
- Forty-eight regulations were made under Acts administered by the Ministry and 447 Orders-in-Council were prepared and processed.

Field Organization

Ministry of Natural Resources
Regions and Districts in Ontario



Forest Resources Group

The Forest Resources Group replaced the Division of Forests in the Ministry reorganization which began on December 1, 1977, with the establishment of Forest Resources Branch, amalgamating two branches, Forest Management and Forest Research, the latter continuing as the Ontario Forest Research Centre. Consisting of the new branch and Timber Sales Branch, the new Group succeeded the Division as of April 1, 1978.

Forest Resources Branch

The objective of the Branch is to produce optimum and continuous industrial, social and environmental benefits from public forests and to encourage and assess similar production on private lands in Ontario.

Ontario Forest Research Centre

The Ontario Forest Research Centre continued to provide scientific and technical knowledge and information to improve the management of forest resources in Ontario.

In northern Ontario, regeneration of the spruces, management of balsam fir, and aspen regeneration on upland sites of the spruce-fir-aspen forest are being studied. Experiments deal with lengthening of the planting season, the performance of planted black spruce stock, seed production, stand development of the mixed wood forest, and the quality of aspen regeneration.

For artificial regeneration of forest land throughout Ontario, suitable planting stock must be produced and it must be able to grow adequately when planted. Studies on stock production and performance of conifer stock range from seed factors through nursery practices, lifting, cold storage and transportation to survival and growth after planting.

The potential growth of the forest of the future depends not only on the techniques used for their establishment, but also on the genetic characteristics which govern potential growth. Tree improvement and breeding research in conifers, poplars and some other broad-leaf species were continued, providing management with new plant materials.

Studies in spruce are far advanced and deal with genetic variability of seed source, breeding of hybrids, and studies on soil requirements of these hybrids.

Blister rust-resistant hybrid white pine is being developed. Improvement of genetic quality of jack pine seed is sought through selection and testing. Substantial gains are anticipated in a relatively short time with the larch genus.

Important new options have been provided to forest land management as a result of the breeding of hybrid poplars. That breeding program provides suitable material for pulpwood production in intensively managed plantations on marginal or sub-marginal farmlands (short-rotation poplar); for wood fibre, energy and food production on densely grown, intensively managed, frequently harvested coppices on farmlands (poplar farming); and for veneer and pulpwood production in forest-type plantations on cut-over woodlands.

Machinery is being developed to expedite the production of nursery stock and to harvest the crop of poplars. Other studies deal with the rooting ability of cuttings, resistance to frost, diseases and insects, and with growth and yield in relation to soil features and biomass characteristics.

The broad-leaved forests of southern Ontario have a considerable potential for the production of highly valuable lumber and veneer and for general recreational use. Methods in thinning and logging are being developed to satisfy various uses.

To control development of defect on sugar maple, studies are dealing with principal factors that cause defect and with concepts and techniques that will promote high-value growth.

Mathematical models are being tested to quantify the interaction effect of variables on yellow birch regeneration and to provide management with a better understanding of the effects of treatments on stand development and growth.

Research is progressing in the development of cultural techniques for the establishment of valuable tree species, such as walnut and oak, on upland soils of abandoned farmland in southern Ontario and for the tending of resultant forests and woodlots. On lowland swamp sites, work is aimed at rehabilitation of stands with a variety of improved stock. Production of non-fibre crops, such as maple sap, nectar and nuts, is also being investigated as part of forest land management practices on suitable sites.

The knowledge of soil and site in relation to tree growth, or forest productivity, is fundamental for planting and managing a new forest crop. Recent constraints have severely reduced the research capability to deal with this important field of investigation. Current studies deal with the establishment of new forest stands and those already established. Growth and prediction of yield of pine and tolerant hardwood are being examined; and at a broader scale, improvements in forest inventories are being developed.

Silviculture

Tree Seed Program

The inventory of forest tree seed in storage at the Ontario Tree Seed Plant, Angus, as of June 1, 1977, was 3,545,000,000 viable seeds of 92 species, weighing 15,500 kgms and valued at $950,000.

The year 1977 was a good crop year for many of the species used in the reforestation program.

1977 Seed Crop by Species	Hectolitres Collected
White Pine	5,266
Red Pine	361
Jack Pine	16,620
White Spruce	148
Black Spruce	87
Norway Spruce	143
White Ash	77
Red Oak	82
Black Locust	50
Black Walnut	1,618
Other Species	278
Total	24,730

Seed Distribution

A total of 1,638,243,000 viable seeds was used to carry out 214 regeneration projects in the Province during 1977, an increase of 236,763,000 viable seeds over 1976. This seed was used in four main programs.

Nursery Stock Production	384,227,000
Tubelings	16,441,000
Direct Seeding	1,215,077,000
Research and Miscellaneous	22,498,000
Total Viable Seed	1,638,243,000

Classification of Cut-Over Forest Land, 1977-78

Area in Acres

Cutting Method	Available For Regeneration Treatment	Natural Regeneration Without Treatment	Not Available For Regeneration Treatment	Total
Clear Cut	161,682	75,286	64,329	301,297
Selection Cut	—	65,353	—	65,353
Partial Cut	—	—	97,868	97,868
TOTAL	161,682	140,639	162,197	464,518

Regeneration and Tending of Forest Land, 1977-78

Area in Acres

REGENERATION	Crown Land	Agreement Forests	W.I.A.	Sub-Total	Other Patent Lands	Total
Planting Nursery Stock	42,509	1,051	9,496	53,056	6,499	59,555
Container Stock	5,860	40	46	5,946	—	5,946
Seeding	71,145	—	—	71,145	—	71,145
Scarification	11,637	25	—	11,662	—	11,662
Strip Cutting	8,301	—	—	8,301	—	8,301
Seed Tree Cutting	14,304	—	—	14,304	—	14,304
Shelterwood Cutting	20,346	460	403	21,209	—	21,209
Clear Cutting	5,251	211	—	5,462	—	5,462
Total	179,353	1,787	9,945	191,085	6,499	197,584
TENDING						
Hand Cleaning	19,417	1,615	663	21,695	—	21,695
Herbicide Spraying	34,089	369	1,514	35,972	6,905	42,877
Thinning Improvement Cuts	42,683	5,689	10,781	59,153	1,015	60,168
Pruning	2,003	1,442	1,060	4,505	—	4,505
Fertilization Drainage	451	755	147	1,353	—	1,353
Total	98,643	9,870	14,165	122,678	7,920	130,598
TOTAL AREA TREATED	277,996	11,657	24,110	313,763	14,419	328,182
Site Preparation For Regeneration	103,525	957	2,373	106,855	—	106,855
Marking For Regeneration and Tending	115,082	8,891	14,147	138,120	9,190	147,310

Tree Improvement

Plus trees selected . . . . . 287 trees
Scions, Grafted 10,681
Grafted stock, Outplanted . . . . . 1,524 trees
Seed Collection Areas* . . . . . 14,025 acres
Seed Production Areas . . . . . 685 acres
Seed Orchards . . . . . 205 acres

This program is designed to improve seed quality and increase the quantity of available tree seed to meet production requirements.

Planting Stock

Distribution, conifers 45,351,140
hardwoods 2,940,702
Total 48,291,842
Production Targets seeded 72,130,000

Private Lands

The Woodlands Improvement Act	Agreements	Acres
New agreements activated, 1977-8	843	37,626
Agreements in effect March 31, 1978	6,217	277,874

Number of Trees Planted: 7,158,575.

These operations are carried out on private land under The Woodlands Improvement Act agreements. The acreage treated is an integral part of forest production targets, particularly in southern Ontario where there is no significant area of Crown land.

**A term used to describe superior stands which are reserved and logged periodically to supply seed and then regenerated with the same seed source to maintain them as gene pool reserves.*

Agreement Forests

Agreements Holders	Added 1977-8	Released 1977-8	Acreage
1 Government of Canada	.....	.....	3,532.00
23 Conservation Authorities	749.56	111.30	94,262.19
19 Counties	1,131.24	64.51	145,114.29
10 Townships	.....	.....	3,029.24
6 Regional Municipalities	1,481.00	.....	20,545.03
59 Totals	3,361.80	175.81	266,482.75

The agencies reported above have forest management agreements with the Minister under The Forestry Act. The agencies' forests are an integral part of forest production targets, of particular importance in districts with no significant Crown land areas.

Advisory Services

1. Number of public inquiries serviced	76,659	
2. Number of field inspections made	7,705	
3. Number of forest management programs prepared	519	
4. Total area for which management programs were prepared	22,168	acres
5. Trees purchased and planted by private landowners	7,634,143	
6. Timber marked for harvesting:		
Sawtimber	3,709,884	cu. ft.
Pulpwood and Fuelwood	19,772	cords
7. Activities with youth groups	250	groups

8. Public education activities and services	1,501	items
9. Days of forestry instruction provided to schools, colleges, universities	346	days

The data (above) are a measure of the forestry extension program offered to all landowners. An improvement in landowner management practices is desired to ensure the establishment and maintenance of private forests for the production of forest products and forest values.

Pest Control

Two insect species, the eastern spruce budworm and the forest tent caterpillar, continued to devastate Ontario's forests in 1977. The spruce-fir forest, defoliated by budworm in 1977, declined slightly to 34.8 million acres (14.1 million hectares), five per cent less than in 1976.

An aerial spraying program was conducted on 10,500 acres in the Northern and Northeastern Regions to protect the spruce-fir forest in several provincial parks, tree nurseries and white spruce seed production areas. Two chemical insecticides, Natacel and Orthene, were used. An additional 190 acres of provincial campgrounds were treated with a bacterial insecticide, Thuricide.

Forest tent caterpillar defoliated 30 million acres of hardwood forest in three separate outbreaks in the Northwestern and Northern Regions and much of southern Ontario. Aerial spraying was conducted on 4,400 acres in six provincial parks in the Parry Sound and Bracebridge Districts to preserve the recreational value of the parks. Thuricide was used to treat most of the area, and three chemical insecticides, Dylox, Dimitin and Orthene, were applied experimentally to 400 acres.

A third insect pest, oak leaf shredder, has caused severe damage to red oak stands in southern Ontario in recent years. Awenda Provincial Park was heavily defoliated in 1975 and 1976, resulting in deterioration and mortality of oak trees. To prevent further deterioration, the 1,500-acre park was sprayed aerially in 1977 with insecticides, Sevin and Orthene.

Several other insect and disease pests created serious problems in various districts and required treatment. Over 3,000 acres of red pine and jack pine plantations were sprayed to control red-headed pine sawfly and 120 acres were treated with red-headed pine supply virus by scientists from the Canadian Forestry Service.

Small-scale programs were carried out to control other conifer sawflies, white pine weevil and wild currant, the alternate host for white pine blister rust. Developmental work on the use of a harmless fungus, *Peniophora gigantea*, as a biological control for *Fomes* root rot, was continued.

In total, 26,000 acres were treated for control of insects, diseases and rodents in 1977.

Timber Sales Branch

The major responsibility of the Branch is the orderly disposition of the Province's Crown timber resource through the enactment of major sections of The Crown Timber Act. This is accomplished through the continuous inventory of the forest resource, the review and approval of forest management plans, the allocation of the Province's Crown timber to the forest industry by various statutory methods, the licensing of forest industry mills, the measurement of the harvested volume of Crown timber, and the monitoring of factors affecting the performance of the Province's forest industry.

Forest Resources Inventory

The Forest Resources Inventory Section supervised the tendering, quality checking and indexing of 13,500 square miles of aerial photography of forest land in northern Ontario. In addition, field sampling, photo interpretation, compilation, and drafting of forest stand maps was completed with the co-operation of the forest industry on 18,500 square miles in northern Ontario.

Management Plans

Forest management plans provide the broad framework within which forest operations are conducted. More detailed operating plans for shorter time periods identify the Crown timber stands to be harvested, regenerated and tended, and the roads and other improvements required in Crown, company and Agreement Forest management units.

STATUS OF MANAGEMENT PLANS, March 31, 1978

	Forest Management Units					
	Crown		Company		Agreement	
Areas in Square Miles	No.	Area	No.	Area	No.	Area
Approved Standard Plans	64	70,151	2	13,566	35	259
Plans Submitted for Approval	—	—	2	6,130	2	47
Plans being Prepared and/or Revised	15	27,994	8	27,146	23	105
New Inventory Required	3	11,362	14	30,127	—	—
Inactive and/or Inaccessible or not under plans	6	19,382	—	—	—	—
Total	88	128,889	26	76,969	60	411

Timber Allocation

Crown Timber Licences

Areas under Licence March 31, 1978	Number	Square Miles
Under Section 2, Crown Timber Act	28	13.1
Under Section 3, Crown Timber Act	386	93,125.7
Under Section 5, Crown Timber Act	14	27.0
Total	428	93,165.8

Mill Licences

March 31	1975	1976	1977
Sawmills, 8-hour capacity			
Lumber, capacity over 50 M fbm	53	51	58
Lumber, capacity 10M to 50M fbm	98	90	99
Lumber, capacity under 10M fbm	569	547	588
Miscellaneous	45	27	31
Veneer Mills	23	26	24
Pulp Mills	23	23	22
Total	811	764	822

The Crown timber resource is allocated to the Province's forest industry in accordance with forest management principles and industrial requirements. Crown timber harvesting licences provide the Province's forest industry with the legislative authority to harvest Crown timber on an annual, allowable-harvest basis. The licences take several major forms and are specific as to geographic area, tree species, volumes, stumpage payments and other charges,

and various harvest control measures.

Forest industry mills are licensed to operate with respect to Crown and private timber supplies in a specific locality.

Forest Industry Development

The Forest Industry Development Section is concerned with the growth and development of the various components of the Province's forest industry by monitoring the demand for, and the supply of, timber products and the pattern of trade in these commodities, and by analyzing resource taxation and pricing. The Section assists in industrial expansion and regional development through industrial liaison, policy development and economic analyses.

Pulp Chips, 1976

Ontario Production	Number of Mills	Bone Dry Tons
Shipments	99	1,473,724
Inventory Adjustment	—	—
Total	99	1,473,724

Consumption of Ontario Chips by Jurisdiction	Number of Mills	Bone Dry Tons
Ontario	18	1,254,624
Quebec	7	134,075
Manitoba	1	1,657
U.S.A.	4	83,368
Total	30	1,473,724

Pulp Chips, 1977 (Preliminary)

Ontario Production	Number of Mills	Bone Dry Tons
Shipments	105	1,765,417
Inventory Adjustment	6	4,780
Total	105	1,770,197

Consumption of Ontario Chips by Jurisdiction	Number of Mills	Bone Dry Tons
Ontario	17	1,552,381
Quebec	4	123,984
U.S.A.	3	89,052
Total	24	1,765,417

Wood Measurement

Measurement, or scaling, determines the volume of timber harvested from Crown lands and Agreement Forests. It is the basis for the determination of public revenue and forest production statistics related to the forest industry. Only licensed scalers, approved by the Ministry, may be employed to measure Crown timber for Ministry purposes. These scalers are required to attend standardized scaling refresher courses on a regular basis so that they are kept fully versed in the latest measuring techniques and to ensure that high, uniform scaling standards are maintained. Wood measurement practices in Ontario are under constant review, and new methods are continually explored to ensure that scaling methods keep abreast of the latest harvesting techniques.

Volume and Value of Wood Cut from Crown Land, 1977-78

Tree Species	Volume in Cubic Feet	Bonus	Crown Dues	Stumpage Value
SOFTWOODS				
White Pine	20,726,415.36	$ 707,475.44	$ 1,166,514.97	$ 1,873,990.41
Red Pine	6,152,458.75	200,344.63	340,422.20	540,766.83
Jack Pine	176,958,225.99	384,581.41	10,004,961.28	10,389,542.69
White Spruce	3,025,119.29	5,484.71	172,431.77	177,916.48
Black Spruce	25,173,585.26	34,855.53	1,434,894.84	1,469,750.37
Spruce, Mixed	237,070,643.80	829,349.22	13,423,055.18	14,252,404.40
Hemlock	2,050,229.68	26,709.84	115,341.25	142,051.09
Balsam	18,688,058.91	56,603.49	1,037,027.60	1,093,631.09
Cedar	434,247.90	9,403.66	24,221.71	33,625.37
Tamarack	68,334.47	135.86	3,884.03	4,019.89
Softwoods, Mixed	250,207.70	63.79	2,943.62	3,007.41
Total Softwoods	490,597,527.11	2,255,007.58	27,725,698.45	29,980,706.03
HARDWOODS				
Maple	8,523,432.19	162,176.18	624,711.74	786,887.92
Yellow Birch	3,924,467.45	205,873.88	306,047.69	511,921.57
White Birch	2,341,303.33	35,380.85	27,938.41	63,319.26
Oak	314,937.10	14,261.80	19,490.18	33,751.98
Beech	519,064.63	16,930.83	35,291.88	52,222.71
Ash	46,442.38	2,210.35	3,147.08	5,357.43
Elm	21,893.81	674.87	1,995.88	2,670.75
Basswood	273,970.20	15,453.74	16,298.76	31,752.50
Butternut	398.67	3.40	27.70	31.10
Cherry	29,489.91	399.75	2,393.06	2,792.81
Poplar	37,419,123.63	126,845.50	445,874.75	572,720.25
Hardwoods, Mixed	15,996,912.00	121,842.89	191,025.13	312,868.02
Total Hardwoods	69,411,435.30	702,054.04	1,674,242.26	2,376,296.30
TOTAL	560,008,962.41	2,957,061.62	29,399,940.71	32,357,002.33

Mineral Resources Group

The Mineral Resources Group replaced the Division of Mines in the reorganization of the Ministry which began late in 1977. The Group includes Mineral Resources Branch and the Ontario Geological Survey which replaced Geological Branch. Mineral Research Branch was replaced by Geoscience Laboratories within the Ontario Geological Survey. The formal completion date of the new Group was April 1, 1978.

Mineral Resources Branch

The prime objective of the Branch is to assure the orderly development and optimum use of provincial mineral resources in line with the Ministry's policy of broadening the base of mineral development and processing in Ontario. The most important function of the Branch is to provide the Minister of Natural Resources with in-depth researched information and mineral policy options, as well as to ensure equitable mining tax assessments. Major areas of responsibility for the Branch are as follows:

(a) Development and administration of mineral resource policies;

(b) Analysis of the effectiveness of present public policies in various jurisdictions in respect of mineral resource development;

(c) In-depth world-wide mineral commodity studies on each mineral element in provincial mineral reserves, with priorities set for nickel, copper, zinc, iron ore, precious metals, uranium and structural materials;

(d) Administration of The Mining Tax Act, The Petroleum Resources Act, The Pits and Quarries Control Act and certain parts of The Mining Act;

(e) In-depth analysis of the existing tax systems to develop a more effective mineral taxation policy;

(f) Economic studies of metal and mineral markets and factors affecting Ontario's mineral output;

(g) Federal-Provincial liaison on mineral resources problems;

(h) Determination of an inventory of the Province's mineral resources, commodity by commodity, and commercially viable ore reserves;

(i) Continuing analysis of the mineral reserves position against present and projected world supply and demand for minerals;

(j) In-depth studies of mining and exploration company decision-making processes;

(k) Preparation of plans to stimulate exploration for, and development of, mineral resources in Ontario;

(l) Studies on economic behaviour of multi-national mineral resources companies;

(m) Co-ordination of external research studies to evaluate junior and senior mine financing aspects; and

(n) Development of computer models to assess the impact of taxation and environmental controls on the Ontario mining industry.

Metallic Minerals

The objectives of the Metallic Minerals Section are as follows:

(1) To provide effective metallic mineral policy options for the Mineral Resources Group based upon in-depth research on a commodity or topical basis;

(2) To monitor metal market trends as well as technological progress in the mineral sector; and

(3) To monitor policy developments in other jurisdictions with respect to their anticipated impact on Ontario metal mining and processing.

The discussion paper entitled "The Ontario Metal Mining Industry – Present and Future" was released in February, 1977. It pointed out that the Ontario mining industry was faced with severe problems such as depressed metal markets, huge inventories and associated layoffs, restricted cash flows, heavy debt burden and inadequate rate of return. Major policy issues were highlighted.

It is still a fact of life that the health of the Ontario mineral sector depends mostly on the health of the economies of the industrialized nations such as the United States, the E.E.C. and Japan.

On a commodity basis, a study entitled "Towards a Nickel Policy for the Province of Ontario" was completed and is expected to be published as a policy background paper in 1978. The Nickel Study is the first compendium on the nickel industry anywhere.

The paper entitled "The Ontario Zinc Industry on a Global Scene and Various Government Policies" was accepted for presentation at the Plenary session of the Eleventh Commonwealth Mining and Metallurgical Congress to be held in Hong Kong in May, 1978. This paper was based upon the previous year's zinc commodity study.

The mineral inventory work, carried out in co-operation with Geological Survey of Ontario staff, forms an important part of the data base for analysis and formulation of policy options for the Government of Ontario. The mineral inventories on uranium and zinc are completed, – subject to periodic routine updating, – and the nickel inventory is well under way.

The first stage of the simulation model of investment effects of taxation and environmental changes was programmed on computer. The completed report on Stage II was broken down and expanded into several separate background papers, three of which – on mineral conservation, on the computer model, and on factor substitution and technical change in mining – are now being printed.

A paper on environmental problems of the mining industry, arising out of the Stage II study, is being edited. The major part of the third and final stage of that study – (the development of a prediction of consumption and pricing ranges for our major metallic minerals) is proceeding on schedule.

Consultants' reports on the changing structure of mine financing and on junior mine financing were completed and submitted to the Ministry for evaluation. These reports are expected to be published in 1978.

The participation of the Ministry in aspects of Syncrude has resulted in major savings to the project through recommendations in the areas of mine planning and equipment selection.

Section staff prepared comprehensive briefing material for the staff of the Hartt Commission. Involvement in Onakawana will increase. Two mine hazard lands studies have been commissioned.

Liaison with organs of the federal government, provincial governments and some foreign jurisdictions, as well as with mining company representatives, continued on matters pertaining to Ontario mineral policy and mineral industry matters of mutual concern.

As required the Section undertakes detailed analysis and recommendations of alternative solutions for any other problems that affect the metallic minerals sector of the economy, as they assume importance in the eye of the public, the industry or this Ministry.

Industrial Minerals

The Industrial Minerals Section has two major functions:

Acquiring and interpreting relevant data on industrial minerals (non-metallics and structural materials) with the objective of presenting government with options for viable provincial policies concerning the extraction and use of these materials; and

Administering policy matters related to The Pits and Quarries Control Act, 1971.

The policy function will be developed on a progressive basis to deal with each industrial mineral and rock commodity by implementing the processes outlined as major areas of responsibility for the Branch. In addition, the Section establishes liaison with and is able to make its expertise available to producers and consumers, the general public, Regions, Districts and other Branches of the Ministry of Natural Resources, and governments at all levels.

The Section's function in administration of The Pits and Quarries Control Act involves a dual role. On one hand, consultation and guidance are continuously provided to the Ministry's field offices which, through their mineral resources supervisors and quarry inspectors, are responsible for implementing the requirements of the Act. On the other hand, the Section is directly responsible for processing pit and quarry applications from northern Ontario in Sudbury and Sault Ste. Marie which have not yet assumed their responsibility.

In March, 1977, the Ministry's Eastern Region became the third region, after Central and Southwestern Regions, to assume responsibility for processing pit and quarry licences. This shift in responsibility is consistent with the Government's plan for decentralization of operations.

A major focus of activity in 1976 and 1977 was the Section's involvement in the Ontario Mineral Aggregate Working Party which was appointed in December, 1975, by the Ministry to investigate the problems of the aggregate industry in Ontario. The Working Party was comprised of people from government and other groups most concerned with the problems associated with pit and quarry operations. In January, 1977, the Working Party presented its report, "A Policy For Mineral Aggregate Resources Management In Ontario," to the Cabinet. It offered 64 recommendations on how the aggregate industry problems could be resolved. As a direct result of this Report, the Section is now involved in writing a new Act to regulate pit and quarry operations in Ontario.

Mineral aggregate studies for the Sudbury and Thunder Bay areas of northern Ontario have been contracted out to consultants and should be completed in the summer of 1978, bringing to five the number of such reports.

Two research studies on rehabilitation were carried out in the summer of 1977 with funding from the Industrial Minerals Section. One study on abandoned pits and quarries, conducted jointly with the Regional Municipality of Waterloo, will be published in 1978. The other study, connected with the University of Guelph, examined the state of rehabilitation in licensed aggregate sites on specific areas of southern Ontario. A bibliography on the rehabilitation of pits, quarries and other surface-mined lands has been compiled and published by the Ontario Geological Survey.

At the end of 1977 there were 278 geographic townships designated under The Pits and Quarries Control Act, unchanged from the previous year. A total of 1,600 pit and quarry licences have been issued in the designated areas.

Mining Tax Assessment

With reorganization completed, the Mining Tax Assessment Section now has a full-time mine assessor, six assistant mine assessors and one contract assistant mine assessor. The assistant assessors reconcile the returns filed with the taxpayers' accounting records and prepare draft assessments for the mine assessor.

Mining tax returns received for 1976 and 1977 indicated estimated liabilities under The Mining Tax Act of $62,438,000 and $41,041,000, respectively.

During the 1977 fiscal year, 57 assessments were issued. The assessed taxes amounted to $13,119,285.

Petroleum Resources

The Petroleum Resources Section is responsible for all the activities associated with the oil and gas exploration, drilling and production industry in Ontario. These functions include the conservation and development of Ontario's petroleum resources in conjunction with acceptable environmental and safety standards.

Geological and engineering data are collected on all wells drilled in the Province and consolidated in the form of publications and maps which are made available to the public to encourage the equitable development of Ontario's petroleum resources.

The Section's staff includes qualified geologists, reservoir engineers and resource officers. As an integrated regulatory and scientific agency, it is able to advise Government on all problems arising from legislation and the wide variety of technical and scientific problems related to oil and gas exploration and development in Ontario and other areas of Canada.

The Section, operating under the authority of The Petroleum Resources Act and Regulations made thereunder, requires the submission of all information collected in the drilling and production of wells. This information is submitted in the form of core and drill cutting samples, engineering and geological completion reports, fluid analyses, monthly and annual production reports, and a variety of reports required of the various licences issued.

All data are validated by the appropriate regional resource officer, and interpreted and transcribed by geologists and engineers into readily accessible forms by way of hard-copy documents, microfilm, and computer output for both internal and public use.

Through its drafting unit, the Section compiles and constructs 15-minute quadrant maps for southwestern Ontario, showing all oil and gas wells and regulation spacing areas. The maps are updated daily and made available to the public.

The geological well samples are washed, bottled and stored in the repository facilities located in London. Here they are made available to geologists and engineers from industry and universities for research studies.

Under the authority of The Mining Act and Ontario Regulations 546/71, the Section regulates the disposition of mineral rights within Lake Erie. To the end of 1977, the Section had issued 2,469,559 acres under Licence of Occupation and 232,607 acres under production leases to a total of seven operators.

During 1977 a total of 188 wells was drilled in Ontario, including 65 wells in Lake Erie. Off-shore operations are closely scrutinized by the resource officer staff, normally operating on a 24-hour basis and staying aboard the drilling vessel during critical phases of operation.

Since 1858 more than 100,000 oil and gas wells have been drilled in Ontario, and many have never been properly plugged. As a result the Section, through Government funding, administers the plugging of hazardous wells on a priority basis, and in turn works closely with the Ministry of Treasury, Economics and Intergovernmental Affairs and other agencies in this regard.

Mineral Economics

The Mineral Economics Section is responsible for the following functions:

1. Economic and statistical research as an input to the development of mineral policy options;
2. Development and maintenance of an economic and mineral commodity data base;

3. Annual survey and preparation of annual reports on
(a) Mineral Industry Statistics, and
(b) Mining Accident Statistics and Employment;

4. Collection and analysis of national and international data on all metals and minerals commodities, prices, markets, consumption trends, tariffs, duties and export-import restrictions;

5. Publication of Annual Statistical Reports on Ontario's Mineral Industry;

6. Studies on economic impact of mineral policies in other provinces;

7. Consulting services in the field of mineral statistics to other branches of the Ministry, other Ministries and the interested public; and

8. Administration of Part X – Refinery Provisions of The Mining Act.

Ontario's Mineral Statistics for 1971-1973 was published in 1977 and the draft report on 1974 statistics was completed. The information and statistical data in these and previous reports have been made available to the interested public on an open file.

In addition to the statistical breakdown of data by major economic areas, Northwestern, Northeastern and Southern Ontario, as well as by major mining centres, the Section also tabulated the 1976 values of mineral output for each of the newly established Natural Resource regions.

The Section provided services in the field of mineral statistics to the staff of the Ministry, other government agencies and the interested public.

Economic and statistical research on mineral resources was reoriented from pure research and assembly to applied research, targeted to output requirements.

At the 1977-8 fiscal year-end, the responsibility for Ontario's mineral statistics was transferred by order of the Management Board of Cabinet from the Central Statistical Services of the Ministry of Treasury, Economics and Intergovernmental Affairs to the Ministry of Natural Resources.

The centralized statistical function was assigned to Mineral Resources Branch and then to Information and Mineral Statistics Section, the successor to Mineral Economics Section.

Ontario Geological Survey

The Ontario Geological Survey provides information on the geology and mineral resources of Ontario to encourage industrial exploration, to provide a basis for land-use planning, and to aid in the development of non-renewable resource policies.

Geological, geophysical and geochemical surveys identify favorable locations for mineral and aggregate deposits and provide increased knowledge and understanding of the geological history of Ontario. Existing data on mineral deposits are compiled, and areas having significant potential identified. Educational programs and published reports and maps are made available to the public. Additional scientific contributions are made by presenting papers and leading field trips at geoscience conventions.

The Ontario Geological Survey administers the Mineral Exploration Assistance Program (MEAP) whereby the Government reimburses an individual or company one-third of the cost of an approved exploration expenditure (maximum $100,000) in any of six designated areas.

On November 15, 1977, the Minister of Natural Resources announced that in 1978 the Ontario Geoscience Research Fund would sponsor applied research at Ontario universities to facilitate mineral exploration by the private sector in Ontario. The research projects will be complementary to, and closely integrated with, the work of the Ontario Geological Survey. During the fiscal year the advisory committee, composed of university, industry and OGS representatives, was organized, and university project proposals for 1978-9 funding were submitted.

Precambrian Geology

During the summer of 1977, 22 field crews surveyed and produced interpretive maps of the bedrock in 24 areas of the 600,000 km^2 Precambrian Shield of Ontario. Surveyed areas ranged from 185 km^2 to 3000 km^2 depending upon the detail and scale of the survey. A total of 2,400 km^2 was mapped at a scale of 1:15,840 and a total of about 9,600 km^2 at scales of 1:63,360 or 1:126,720.

The objectives of these surveys are to record the bedrock geology, identify geological environments favorable to the occurrence of mineral deposits, and to identify Precambrian bedrock geology features which influence mineral concentration and the utility of the land. Mapping focussed on seven major geological belts and one province-wide feature.

While the potential for any mineral commodities is not overlooked, work on the Uchi Belt projects (between Red Lake and Slate Falls), on the Wabigoon Belt projects (which included commencement on a regional study of the volcanic belt extending from Crow Lake to Savant Lake), and on the Abitibi-Wawa Belt projects (scattered from Kirkland Lake to Hemlo), was initiated principally on the anticipated base metal, precious metal, and molybdenum potential of these belts.

Completion of a helicopter supported reconnaissance of the English River Belt from Marchington Lake to the Manitoba Boundary, and detailed mapping in the Quetico Belt, in the Southern Province between Sault Ste. Marie and Sudbury, and in the Grenville Province of southeastern Ontario had highest significance for uranium and industrial mineral potential. A province-wide study of alkalic-carbonatite intrusive complexes with base metal, rare earth, phosphate, uranium and industrial mineral potential was also completed.

In addition to field operations, three geological compilation maps (at scales of 1:253,490 and 1:1,013,760) were prepared and two others were in preparation; and several field trips, papers and talks were prepared for industry, scientific and ministry groups.

Engineering and Terrain Geology

The Engineering and Terrain Geology Section is responsible for the survey and analysis of all geological materials younger than the Precambrian. These include the sedimentary rocks of Paleozoic and Mesozoic age of the James Bay Lowlands and of southern Ontario together with the great variety of glacial deposits of Quaternary age which cover the entire province. Major thrusts in these responsibilities are the stratigraphic mapping of the rocks of these ages and the preparation of an inventory of mineral aggregates throughout the province. An important role is to provide information to, and liaise with, municipalities for aggregate resource planning.

Nine field parties were operational in 1977. Surveys of Quaternary geology were carried out near Thunder Bay, Sudbury and New Liskeard in northern Ontario and in the Strathroy-Bothwell-Ridgetown area, the Sarnia-Perch area and in Bruce, Grey and Renfrew Counties in southern Ontario. Sedimentary rocks were investigated in the Onakawana area in the north and in the Windsor-Pelee Island area in the south. Studies of residual stress in the Paleozoic rocks in the Hamilton area were supported in the late summer and early fall.

Major steps were taken in the preparation of aggregate resources inventories for all townships in southern Ontario designated under The Pits and Quarries Control Act, a task expected to be completed in 1980.

A major project was initiated in northern Ontario with

a start on the engineering terrain evaluation of more than 143,000 square miles north of latitude 46°. This work was contracted out to four consulting companies on behalf of the Ministry of Northern Affairs.

A study of the physiography and surficial geology of an area in northwestern Ontario, initiated by the Ontario Centre for Remote Sensing, was supported by a staff geologist from the Section.

The Section name was changed from Phanerozoic Geology Section in January, 1978.

Geophysics / Geochemistry

Staff scientists of the Geophysics/Geochemistry Section carried out two geophysical projects and one geochemical project during the 1977 summer field season.

Geophysical survey crews carried out gravity measurements at 2,812 gravity stations in the North Bay-Cobalt area (11,750 km² or 4,540 sq. miles). This survey covers parts of the Superior, Southern and Grenville Provinces and the results will reveal further information on the structural characteristics over the Grenville Front.

The Section was also responsible for planning reconnaissance airborne gamma-ray spectrometer and regional lake sediment geochemical surveys which are part of the federal-provincial Uranium Reconnaissance Program. This joint program provides data base information for uranium mineral exploration and for the geological assessment of Ontario's uranium potential.

An airborne gamma-ray spectrometer survey was carried out over the Sudbury, North Bay, Tobermory, Huntsville and the north half of the Lake Simcoe NTS sheets. A regional lake sediment geochemical survey for uranium and basemetals was carried out in the Thunder Bay and Schreiber NTS sheets including the southern half of the Nipigon and Long Lac NTS sheets. The results of these surveys were released in the Spring of 1978.

Two follow-up investigations were carried out in southeastern Ontario as part of the joint uranium program. They were directed toward evaluating the effectiveness of recently published gamma-ray spectrometer and lake sediment geochemical data covering the Pembroke and Kingston NTS sheets, 31F and 31C, respectively.

A new autocartographic laboratory was constructed during the past year and is now operational. This facility was designed with the co-operation of the Surveys and Mapping Branch to develop electronic data processing and plotting techniques to serve a wide variety of resource-related functions requiring the handling of large amounts of numerical data.

The equipment now in place consists of a Calcomp 745 flatbed plotter, a PDP 11/50 computer and two digitizing tables. A full software library of Calcomp plotting routines has been established and tested on the Queen's Park IBM 370 computer and will be used in conjunction with this facility to prepare geophysical, geochemical and geological data in a variety of graphical forms.

Mineral Deposits

The Mineral Deposits Section studies deposits of both metallic and nonmetallic minerals, their distribution, geology, reserves and potential. An important role is to provide reserve data and resource potential estimates for use in government planning, particularly for land use, parks and transportation corridors, and as background for studies by Mineral Resources Branch.

The Section co-operated in the National Uranium Reserves and Resources Appraisal Program and related studies including assembly and computerization of Elliot Lake drill data. A provincial study of nickel-copper resources, particularly of the Sudbury area, is well under way.

Other studies included metal distribution maps for silver and base metals; a series of mineral potential maps of the Precambrian Shield to aid in large-scale regional planning; a peat study in the Thunder Bay-Ignace area; and studies of industrial minerals, including asbestos, silica and marble deposits. In addition, many producing mines and exploration sites were visited on a routine basis.

Mineral Exploration Assistance Program

Government payments under the Mineral Exploration Assistance Program (MEAP) for the fiscal year were $445, 863, bringing the total government expenditure since 1971 to $2,547,855. The six designated areas are in eastern Ontario, Red Lake, Atikokan, Geraldton-Beardmore, Kirkland Lake and Cobalt-Gowganda. Open file reports 5114, 5147, 5209, 5230 and 5251 cover MEAP to March 31, 1978.

Geochronology Laboratory

The Geophysics/Geochemistry Section shares the responsibility for the management of a geochronology program with the Department of Mineralogy and Geology, Royal Ontario Museum.

The Jack Satterly Geochronology Laboratory, which was initiated in 1975 by a grant from the Ministry to the Museum, has added a capacity to give a stimulus to the understanding of Precambrian crustal history. This facility is providing absolute radiometric ages (by the zircon-uranium-lead method) necessary for unravelling the geological history of the rocks in the Precambrian Shield and related mineral deposits. A long-term program of radiometric age investigations is continuing with emphasis on the mineral-rich areas such as the Early Precambrian (2.7 billion years old) metavolcanic belts and, specifically, on stratigraphic correlation problems related to the positioning and timing of ore deposition in these belts. Studies are being conducted in the Kirkland Lake-Timmins, Confederation Lake, Sturgeon Lake, Manitou Lake and English River areas.

Northern Development Program

In the summer of 1977, the former Geological Branch commenced a three-year Northern Development Program, funded by the Ministry of Northern Affairs. The program has three objectives: to stimulate exploration for fossil fuels in Ontario, to stimulate mineral exploration throughout northern Ontario, and to improve the land capability and aggregate potential data base to assist northern community and regional planning.

The 1977-8 program included a study of fossil fuel occurrences in the Onakawana area (Engineering and Terrain Geology Section), airborne surveys to stimulate exploration in the Red Lake and Marshall Lake areas (Geophysics/Geochemistry Section), peat deposits study in the Thunder Bay area (Mineral Deposits Section), Quaternary mapping in the New Liskeard area and engineering terrain analysis for land capability across a large area between 46° and 50° latitude (Engineering and Terrain Geology Section).

Renfrew-Pembroke Program

A four-year mineral exploration incentives program in the Renfrew-Pembroke region was initiated in 1976, with funding from the Ministry of Treasury, Economics and Intergovernmental Affairs. This program is designed to renew mineral industry interest in the area by supplying information on basic geology and its relation to the known mineral deposits, and by locating areas of highest potential for each of the commodities likely to be found.

Field work and studies of collected data continued in three projects commenced last year by the Mineral Deposits Section: industrial mineral potential, base and precious metals potential, and uranium and thorium potential. An aggregate resources inventory was carried out by the Regional Geologist in Huntsville. The Precambrian Geology Section completed a detailed survey of the Clontarf area

and commenced a two-year reconnaissance survey of the Renfrew area.

Resident and Regional Geological Program

Regional and resident geologists' offices were maintained in the following centres: Kenora, Red Lake, Sioux Lookout, Thunder Bay, Sault Ste. Marie, Sudbury, Timmins, Kirkland Lake, Huntsville, Kemptville, Richmond Hill and London.

Regional and resident geologists provide consultative service to government, industry and public on the geology and mineral deposits of the Province. During the year, they conducted visits on a regular basis to operating mines and both active and inactive prospects and provided geoscience data for a variety of land-planning functions.

They also undertook a variety of field mapping projects and specific studies. Examination of gold deposits associated with carbonate rocks in the Timmins area was continued; an assessment of the industrial minerals potential of the Sudbury area was begun; participation in geologic hazard lands studies was continued in several parts of the province and several commodity analysis studies were begun.

Geoservices

The Geoservices Section provides a support and service function to Ministry geoscientists, management and public.

Geoscience Information Office

The Office organizes and conducts classes of instruction in geology and mineral exploration, answers geological inquiries from the public, and prepares or assists in the production of popular brochures and guidebooks on the geology of Ontario. During the year, education courses included one basic course, two field courses and several field trips. During the summer, half-day geological talks were arranged for most of the Junior Ranger camps.

"The Geological Branch – Its Role in Our Continuing Prosperity" was issued during the year, and the "Rocks and Minerals Information" booklet was revised.

Scientific Review Office

The Office is responsible for the scientific review, editing and publication of all geoscience reports and preliminary maps. The following were printed during the year:

Geoscience Reports, Geoscience Studies	18
Open File Reports	18
Miscellaneous Papers, Miscellaneous Publications	8
Coloured Maps (cartography by Lands and Waters)	32
Preliminary Maps	305

In addition, 31 reports were in progress and under review, and several hundred illustrations were produced by the drafting unit.

Geoscience Data Centre

The Centre performs tasks related to the gathering, research, compilation and computer processing of geoscience data on mineral deposits of Ontario; indexes publications released by the Ontario Geological Survey and reports submitted for assessment work credit; and within its means investigates and improves upon existing data handling systems.

The Centre completed the update and compilation of 512 Source Records for uranium deposits in Ontario. Two computer-based files were created; one contained geoscience data on 1,074 iron deposits and the other covered data on 982 diamond drill holes completed between 1953 and 1975 to explore the uranium-bearing formations in the Elliot Lake area.

During the year, 790 OGS publications, assessment reports and MEAP reports were indexed for computerized storage in the Ontario Index to Geoscience Data.

Assessment Files Research Office maintains for public use a library containing all technical surveys filed for assessment credit. During the year it filed prospectuses, summary reports from the Ontario Securities Commission, and technical data filed in accordance with the Mineral Exploration Assistance Program.

A feasibility study was undertaken on the implementation of an integrated province-wide microfilm and computerized index system for exploration reports submitted by the mining industry.

Geoscience Laboratories

Geoscience Laboratories provide scientific support and technical services for the programs of the Mineral Resources Group. The service includes assistance to the private sector as well as in-house activities. The Toronto and Cobalt laboratories charge fees for outside work but avoid competition with private laboratories.

Temiskaming Testing Laboratory (Cobalt) – The primary functions of the laboratory are the bulk sampling of silver-cobalt ores and concentrates and the determination of silver, cobalt, nickel and copper so that the market value of mine shipments can be established. While silver ores are given priority, the mill is available for the processing of other rocks, ores, and concentrates.

The bulk sampling function consists of car sampling and machine sampling of ores and concentrates, mainly from mines in the Cobalt area. Cash revenue was low during the year because of the small volume of shipments from the mines and the emphasis on low-grade concentrates.

Analytical Laboratory (Toronto) – The laboratory scientists conduct research on analytical techniques and provide a wide variety of analyses on geological materials. Their work ranges from the determination of major constituents of rocks and ores to the geochemical analysis of soil, rock, water and vegetation samples for trace elements. The Laboratory is equipped with up-to-date analytical equipment including a computerized multi-channel x-ray spectrometer, emission spectrographs and absorption apparatus.

With the expansion of instrumental analysis, a quality control program has been established to maintain adequate standards of accuracy and precision; twelve controls, representing a range of rock types, have been prepared to date.

The laboratory continued to support reference material projects sponsored by CANMET and Canada Centre for Inland Waters. Data for four materials were submitted.

Methods development and research continued to be important for meeting program needs. Semi-automated methods for antimony and arsenic were established and x-ray fluorescence methods for thorium, cesium and cerium were improved.

Mineral Sciences Laboratory (Toronto) conducts research with respect to mineralogy, petrology and physical testing. Examinations, consultations and projects for the public are significant. The laboratory contributes in various ways to the rock analysis program, mainly through the maintenance of the OGS rock and thin section library and the development and implementation of a computerized norm program for all analyzed samples. This is useful to geologists for the interpretation of data.

The laboratory assisted with analytical, mineralogical and physical testing in the following geological projects: Study of Ontario Peat Bogs, Mineral Exploration Incentives Program for Pembroke – Renfrew Region, Synoptic Studies for Volcanic Rocks, Alkali Rocks and Carbonatites of Ontario, A Geotechnical Study at Various Suites of Sensitive Clays, and Marbles of Ontario.

Technical Services Office arranges for the requisitioning, maintenance and cataloguing of all field equipment, vehicles, furniture and scientific instruments for the Ontario Geological Survey.

Outdoor Recreation Group

The Outdoor Recreation Group was established on February 1, 1978, with the amalgamation of the Division of Fish and Wildlife and the Division of Parks. The five constituent branches were reduced to three as of April 1, 1978. Park Management and Park Planning were combined to form Provincial Parks Branch. Fish and Wildlife Research Branch ceased to function as a separate branch and its constituent elements were attached to Fisheries Branch and Wildlife Branch.

Fisheries Branch

The objective of Fisheries Branch is to maintain and enhance the fish populations of Ontario as a stable base upon which recreational and economic benefits are provided to the people of this Province.

Fish production potentials of many Ontario lakes have been seriously reduced and several fish populations have lost their stability during recent decades. General stresses acting on fish populations are excessive exploitation, degradation of habitat and water quality (by land and water based developments and by nutrients and/or contaminants), and side effects of newly introduced or invading species such as smelt and sea lamprey.

Recovery of the former fish production potential of Ontario waters requires a more intensive degree of fisheries management effort throughout the province. This will include continuing international participation in the Great Lakes Fishery Commission program and an increased fisheries role in water-quality management programs co-ordinated by the International Joint Commission.

The strategy recommended by the federal-provincial Strategic Planning for Ontario Fisheries (SPOF) study was presented to Cabinet during the fiscal year and received approval in principle. This study has identified problems affecting Ontario's fish resource and has recommended an expanded fisheries program complete with new policies, more staff and additional funding to rectify the problems. During the year, several working groups developed new policies in areas identified by SPOF.

Commercial Fishery

In 1977 the landings of many species remained comparable to those of previous years with some exceptions. In terms of value, yellow perch in Lake Erie represented 62 per cent of the 1977 harvest. In terms of weight, the Lake Erie fishery supplied 45 per cent of the commercial harvest.

Landings of sunfish in Lake Ontario and southern inland waters declined by 27 per cent from 1976 while catches of white perch declined 59 per cent.

In Lake Erie, the smelt harvest increased 34 per cent and yellow perch landings increased 83 per cent. In Lake Huron, however, the yellow perch harvest decreased 43 per cent in weight.

The total commercial fish harvest in Ontario waters was 51.8 million pounds, substantially larger than the 45.1 million pounds netted in 1976. Strengthening prices for most fish species raised ex-vessel values to $14.5 million from $12.5 million in 1976. Baitfish catches were relatively constant but fishermen had higher financial returns due to increased prices.

Employment in both fisheries was up slightly from the estimated 5,500 persons reported in 1976. A reported $24.0 million was invested in the food-fishery.

The Freight Equalization Program continued, under a revised rate schedule, to assist fishermen in remote areas of the Province to meet high freight costs. Harvests of otherwise under-used fish species in the more accessible fisheries in northwestern Ontario were also stimulated.

Under the federal-provincial Fisheries Industrial Program, a number of projects were carried out in 1977.

An estimated 967,000 migrant eels passed into Lake Ontario via the eel ladder at the Moses-Saunders Dam. Approximately 10,000 upstream migrants were tagged to assess the long-term value of this access. It has been recommended that the ladder be made permanent and larger to accommodate more fish.

Demonstrations of techniques and equipment for bait-fishermen were continued. In Napanee District, stocks of bait-fish were located and assessed and more efficient harvesting methods were developed.

Canadian paired trawling was initiated in Lake Erie to explore methods of harvesting coarse fish.

A large monofilament-mesh trap net was constructed in Thunder Bay to harvest whitefish. The net will be used for further exploration and demonstration of effective impounding gear for lakes in northwestern Ontario.

Fish Culture

The Fish Culture Section is responsible for planning and co-ordinating production of eggs and young fish to be stocked in selected Ontario waters. In 1977, approximately 7.7 million eggs and 8.3 million fish were stocked. Five per cent of the eggs and 31 per cent of the fish were released into the Great Lakes and their tributaries. The remaining eggs and fish were stocked in more than 1,100 inland waters. Yellow pickerel eggs, representing 94 per cent of all eggs planted, were stocked in seven water bodies.

Approximately 76 per cent of all fish stocked were salmonids, including brook trout (23%), lake trout (27%), rainbow trout (13%), splake (11%), and coho salmon (2%). The remainder were maskinonge (12%), yellow pickerel (8%), smallmouth bass (3%), and largemouth bass (1%).

Development of the fish culture data base was completed and programs for loading and calculating these data became operational. A backlog of hatchery data from 1973-6 was loaded in the data base.

Renovation of the main hatchery at Dorion began in 1977 with completion expected in 1978. Planning for the renovation of the Hills Lake Hatchery began and it is hoped that construction will begin in 1979. Plans for the construction of the proposed new Lennox fish hatchery in southeastern Ontario were again deferred because of monetary constraints.

The disease monitoring program received increased emphasis in 1977. Headwater supplies and hatcheries at Chatsworth and North Bay were treated with a chlorine compound (HTH) to eradicate disease organisms.

An agreement between the Ministry and the University of Guelph permitted the continuation of disease diagnostic services and fish nutrition studies.

Special projects initiated in 1977 included studies on the feasibility of culturing whitefish for the rehabilitation of Lake Simcoe and on techniques for the advanced culture of yellow pickerel.

Fish Habitat (Environmental) Dynamics

The loss of significant portions of fish habitat continues to be a problem. Notwithstanding normal changes during each season, society's activities will constantly stress

and degrade fish populations through destruction of habitat. The rehabilitation of lost or degraded habitat is a slow process during which time fish production is very low.

The study at Nanticoke continued. By a special arrangement with Ontario Hydro, Stelco and Texaco, the Ministry has undertaken a long-term study of the effects of industrialization on fish and related habitat in the Long Point Bay area of Lake Erie.

The pilot study to rehabilitate degraded fish habitat in Wilmot Creek continued. In-stream and stream-bank alterations have been designed to restore this former Atlantic salmon stream and to increase trout production. Intensive monitoring of water quality and related aquatic life will help determine the most cost-effective way of reclaiming other streams in Ontario. Private landowners are being interviewed for their interest in working with the Ministry under agreements for rehabilitation of fish habitat.

Dams, many in disrepair and abandoned, continue to block migrating fish and limit the production of trout to a level much below the potential. Some dams are bypassed by fishways. More than 6,000 trout ascended fishways in 1977 to spawn in the cold, clear upper reaches of Great Lakes streams. Since fishways are poor substitutes for unimpeded passage, the removal of dams and other obstacles is under consideration.

Where costs prohibit the construction of a fishway or purchase and removal of a dam, the trucking of fish past barriers is a reasonable short-term substitute. In 1977, adult rainbow trout were transported above two dams on Bowmanville Creek to locations where they spawned successfully. Similar experiments will continue in 1978. In cooperation with the Ganaraska Conservation Authority, the Ministry is testing a spawning channel on Cobourg Creek and will release adult rainbow trout into the structure in 1978.

The inventory of aquatic habitat in lakes and streams surveyed 681 lakes (300,000 hectares) and 300 km of streams in 1977. To date, a total of 560 fishing maps has been prepared for the public.

Some fish species in certain waters are contaminated with heavy metals, pesticides and other hazardous chemicals. In 1977, approximately 12,000 fish from 270 waters were collected for testing by the Ministry of Environment. This co-operative program will continue in 1978. The objectives include comprehensive reviews of contaminant levels in fish by water body and sufficient advice from health authorities to assist anglers in deciding how much fish to eat at any one time.

Fisheries Policy Development

The Fisheries Policy Development Section is responsible for establishing a planning framework for Ontario fisheries resources and for developing policies to manage these resources.

Input is provided to Ministry strategic land use plans, municipal plans, lakeshore development studies and other planning activities within and outside the Ministry. This input ensures that fisheries concerns are considered and adequately discussed at the planning stage.

The methodology for calculating potential fish yields from lakes was further refined. A publication describing this work is expected in 1978.

Data analyses from the joint federal-provincial angler survey of residents and non-residents who fished in Ontario in 1975 continued. Publication of the results are expected in 1978.

Ontario has more than 500,000 lakes larger than 2.5 acres (one hectare) with a total area of 24,961,000 acres, according to estimates presented in Counts and Measurements of Ontario Lakes, published during the fiscal year.

Administration of the boating restriction regulation program continued. Three regulations were submitted to the federal government for approval and passed by legislation under the Canada Shipping Act.

Liaison between Ontario and the federal government for small craft harbour development continued via the Inter-Ministerial Committee on Great Lakes Access.

Fisheries Research

An objective of Fisheries Research Section is to undertake or arrange investigations to provide the basic understanding needed for optimum, scientific management of Ontario's fish resources. To this end the Section carries out relevant research and publishes its results in internationally recognized scientific journals, and also makes its specialized expertise available to all levels of the Ministry.

Much of the research is aimed at improving our ability to predict the impact of man's growing use of waters and fish communities. Staff have become increasingly involved in multi-disciplinary co-operative work with scientists from sister ministries, the federal government, international commissions and universities. Two excellent examples are Project Quinte and the Lakeshore Capacity Study.

The Project Quinte study, which involves scientists from both the federal and provincial Environment ministries and Queen's and Guelph Universities as well as the Ministry's Lake Ontario research staff, reached an important milestone in 1977. Removal of 80 per cent of the phosphorus from local sewage is now an accomplished fact and the scientific team has completed the comprehensive studies which documented the pre-treatment conditions in the bay. Publication of these baseline studies is expected later this year in a special volume of the Journal of the Fisheries Research Board of Canada. Improvements in water quality are already evident and work is now on hand to follow the response of the aquatic community and to direct it, so far as possible, towards restoration of attractive and profitable fisheries.

As its name implies, the Lakeshore Capacity Study is intended to provide a reliable factual basis for judging the degree of development which can be allowed around recreational lakes without seriously adverse effects. The fisheries component is continuing its evaluation of the relationship between the fish catch and fishing pressure and also between the fish catch and the numbers and kinds of people using the lake—cottagers, day-users, residents and non-residents. It has also developed and applied methods to identify and map important areas in these lakes, which are critical to maintaining fish production, and evaluate the impacts on them of such development activities as dredging, filling, weed removal, dock building, or boating. Throughout, close links have been maintained with related Ministry of the Environment and Ministry of Housing programs.

Research on the genetics, physiology, reproduction, growth and survival of hybrid trout is being continued under both laboratory and field conditions. In particular, comparative tests of the performance of lake trout and a backcross between highly selected fifth-generation splake and the lake trout have been implemented in Lake Huron.

Excellent progress has been made in the identification of separate stocks of wild Ontario brook, lake and rainbow trout on the basis of their genetic characteristics. Three distinct stocks of each species were located in 1977 and shown to have substantially different heritable biochemical characteristics. Because these characteristics are inherited, they serve as natural tags and will allow fishery managers to follow very exactly the contribution made by hatchery plantings derived from these stocks, not only in the first but also in subsequent generations. There is every reason to expect that further identifiable stocks will be discovered as the survey proceeds and that it will soon be feasible to match stocks to the needs of the waters to be planted in ways not now possible.

At the four Great Lakes Research Stations and at the Harkness Laboratory in Algonquin Park, numerous investigations are being conducted into the roles of various environmental factors and fishing pressure on the production of game and commercial fishes. For example, much attention

is being given to the importance of competition from perch, predation by loons, and the particular strain of brook trout planted (wild or domestic) as manageable factors determining the success of brook trout fisheries in Algonquin Park and beyond.

Special efforts are being made to analyse backlogs of information by the elaboration of machine data processing facilities at Maple and at the field research stations. Such developments are furthest advanced at the Lake Huron station where data are now available for analysis by machine methods essentially the same day collected, and substantial progress has been made in making the 30 years of past data similarly accessible. The experience acquired at this unit is now being applied by other research units, especially the Lake Ontario and Harkness Laboratory units, to make their extensive data collections more readily available and useful.

In collecting data, fisheries scientists often obtain information of immediate use to local district management staff and they may advise local management staff. They also act as technical representatives of the Ministry on interministerial and federal-provincial committees, the International Joint Commission for Boundary Waters and the Great Lakes Fishery Commission.

Fisheries Services

Fisheries Services Section is responsible for developing and carrying out programs relating to data processing, information, training and extension, the preparation of legislation, and the printing of fisheries regulations.

Sales of all non-resident angling licences increased in 1977. Seasonal and three-day licence sales rose 1.1 and 1.8 per cent, respectively. Organized camp licences decreased from 5,663 in 1976 to 5,611, a drop of 0.9 per cent. The sale of non-resident smelt licences (which includes bow-and-arrow fishing for carp) increased substantially by 12.2 per cent.

The Canadian resident angling licence for non-residents in Ontario continued in popularity and sales rose by 1.3 per cent in 1977.

The Ontario Fisheries Information System (OFIS) has been developed to the extent that commercial fish harvest data, hatchery production data and lake inventory data are now entered regularly.

The task of developing OFIS is a major one which will continue for some time. Based on this year's experience, a set of proposals, intended to make the system more useful to a greater number of people, has been developed and is now under study.

Population Dynamics

The Population Dynamics Section provides advice to field staff involved in fish population studies, acts as a general repository and reviewer of creel census reports, and orders and controls the distribution of fish tags in the province. The Section is represented on the Lake Superior, Lake Huron, Lake Simcoe and Algonquin fisheries management committees.

Data entry on cassette tapes of a geographical atlas of the 2,000 lake trout waters in Ontario was completed. A fisheries training session for approximately 100 staff, to bridge the knowledge gap between the SCOL training session (1974) and a forthcoming Percis training session, was held in 1977.

A great deal of work (mapping and data analyses) was accomplished on a resource atlas of walleye lakes in Ontario. A draft of a chapter on lake charr (senior author from Fisheries Research) for a book, entitled *Charrs of the genus Salvelinus*, was submitted for review.

Provincial Parks Branch

The number of campers using Ontario provincial parks in 1977 was 1,371,039 and the total visitation was 10,431,166.

The number of provincial parks in operation increased from 122 to 126 with the opening of Murphys Point, a 430-hectare recreational park situated on Rideau Lake approximately 12 miles southwest of Perth, and with the establishment of three nature reserves—East Sister Island, Ojibway Prairie and Peter's Woods.

Improvements, particularly to water, sewage, roads and electrical distribution systems, continued to be priority projects in provincial parks.

Visitor Services

Interpretation Program

A clear improvement in public service began with implementation of the new regional visitor services plans.

By concentrating interpretive programming in a small number of selected parks, a significant increase in delivery quality was achieved with no loss in total attendance. At the same time, a major effort was made to provide self-use facilities, such as self-guided interpretive trails, wayside displays and educational leaflets, in parks lacking organized programs. Both these strategies were well received and will be continued.

Winter Parks

During the winter of 1977-8, only Sibbald Point on Lake Simcoe provided over-night use. Winter facilities at Sibbald included snowplowed roads and campsites, washrooms, drinking water, electricity and fuelwood. Regular fees were charged.

Other parks, such as Arrowhead near Huntsville, Pinery on Lake Huron, Rondeau on Lake Erie and Bronte Creek near Burlington were open for winter day-use. Facilities included groomed cross-country ski trails and snowmobile trails and provided for outdoor skating, snowshoeing, ice fishing and tobogganing. Regular fees were charged.

Bronte Creek and Wasaga Beach Provincial Parks offered skating on artificial ice for the first time. Cross-country skiing, snowmobiling and snowshoeing were popular activities in both parks.

Remi Lake, near Kapuskasing, continued to operate a ski tow and offer cross-country skiing and tobogganing.

Many other provincial parks were used informally for activities such as snowshoeing, cross-country skiing, tobogganing and viewing.

Winter Trails

Through the winter trails recreation program, $500,000 was made available in the form of grants to trail clubs and Conservation Authorities to assist in the grooming and maintenance of more than 8,000 miles of snowmobile and cross-country ski trails throughout the province.

The Ministry maintained 1,000 miles of snowmobile trails and cross-country ski trails on Crown land and many provincial parks also offered similar facilities.

Interior Camping, Canoe Routes

During 1977, 102,000 people entered Algonquin, Quetico, Bon Echo and Killarney Provincial Parks for interior canoe camping and hiking.

An advance reservation system for canoe camping was successfully introduced at Quetico in addition to a can and

bottle ban which has significantly reduced litter problems in the interior.

In total, the Ministry managed more than 15,000 miles of canoe routes in provincial parks and on Crown land.

Access Points

Approximately 1,400 access points with parking areas and boat launch ramps were maintained to provide boaters with access to lakes and rivers.

Provincial Parks Policy and Park Classification

A proposed policy for the provincial park system was finalized and reviewed with the Provincial Parks Council and other ministries of the government. The policy details a goal and a set of objectives for provincial parks, the principles by which the Province's parks will be planned and managed, and a revised park classification scheme. Six distinct park classes are proposed: natural environment, wilderness, recreation, nature reserve, waterway, and historical. The proposed policy was scheduled for review by Cabinet in the spring of 1978.

Detailed planning and management policies for each proposed park class will be released subsequent to approval of the policy.

Park User Survey

The park user survey, initiated in 1974, continued during the 1977 season with surveys of day visitors and campers in 17 parks. The survey provides information vital to the planning and management of the parks. Parks are covered on a rotation basis so that most parks will be surveyed once every five years.

Waterways

A waterway identification and evaluation exercise has produced an inventory of the Province's most promising rivers for waterway designation. The highest rated rivers are being studied in greater detail.

Nature Reserves

Draft frameworks for the systematic identification of provincially significant natural features and environments have been completed. These frameworks will be employed to identify and evaluate potential nature reserves.

The Ojibway Prairie Provincial Nature Reserve at Windsor (65 hectares) was placed into regulation, increasing the number of nature reserves to 11. Land acquisition for a 540-hectare nature reserve on Manitoulin Island was completed with the assistance of the Nature Conservancy of Canada and the Federation of Ontario Naturalists.

Regional Systems Planning

Studies were initiated in the eight administrative regions to appraise the implications of the proposed provincial park policy.

Evaluations of provincial parks and park reserves were made to determine the ability of existing park resources to meet the proposed objectives and targets related to protection, recreation, heritage appreciation and tourism.

Master Plans

In response to requests from many interested individuals and organizations concerning the official status of master plans for provincial parks, an amendment was made to The Provincial Parks Act in June, 1976. The term "master plan" is now defined in the Act. The amendment also authorizes the Minister of Natural Resources to prepare and approve a master plan for any existing or proposed provincial park as well as carry out periodic reviews and make necessary alterations to an approved master plan.

To date, 18 master plans have been approved by the Minister, 16 are pending final review and approval, and 30 others range between initial and advanced stages of preparation. Thus approximately half the provincial parks have master plans either completed or under way.

Public participation programs continued for several planning projects, such as Lake Superior and Polar Bear, to encourage maximum public involvement in the decision making process.

Five-year reviews, involving public participation programs, were carried out on The Pinery and Bronte Creek Provincial Parks master plans.

Land Aquisition

Work continued on the evaluation of future parkland with emphasis on increased recreational facilities for southern Ontario residents. During the year, 546 ha were acquired for parks purposes.

Site Plans, Facility Plans

During the year, a total of 563 detailed site plans were produced. These included campground layout, facility siting, planting, grading and drainage work, graphic design assistance and site surveys, assistance for planning and master plans, and assistance to other government agencies.

Facility and engineering plans, including specifications for tendering, were completed for 196 projects. These included new facility concepts, water and sewage systems, completed building plans, electrical distribution systems and road paving. Planning and other assistance was provided for other government agencies.

Highlights work during the year included corridor improvement studies in Algonquin and Lake Superior Parks; upgrading and improvement to park facilities, particularly water, sewage and electrical systems; development work at Awenda, Bronte, Murphys Point and Silent Lake Provincial Parks; and presentation of a park planning and design course for the staff of Saskatchewan provincial parks.

Ontario Provincial Parks Council

The Ontario Provincial Parks Council was established in October, 1974, to advise the Minister on parks-related issues. The Council's second annual report was submitted to the Minister in March, 1977, with recommendations on a variety of issues including park policy, revenue generation, privatization, park regulations and Algonquin Park.

The Council held public hearings during the year in Toronto, Niagara, Sault Ste. Marie, Wasaga, Quetico and Pembroke and examined a number of subjects including the role of Nature Reserves, rowdyism, park planning and legislation. Membership on the Council was reduced from 19 to 10 members. Dr. George Priddle, from the University of Waterloo, continued to serve as Chairman of the Council.

Ontario Trails Council

Under the chairmanship of William E. Coates, the Ontario Trails Council completed its work in the fall of 1977 and submitted its final report to the Minister of Natural Resources. In two years the Council had conducted 15 public meetings in Ontario centres and received 352 briefs. Its final report presented 90 recommendations grouped in 14 topic areas as follows: civil liability, Ontario trails program, legislation, management responsibilities, planning, human resources, land resources, trail stability, funding, user information, trail mapping, safety, compatability and special trail requirements.

Wildlife Branch

The Branch objective is to manage, enhance and interpret wildlife populations and habitats to provide optimum wildlife-based recreation opportunities for the residents of Ontario as well as a continuous contribution to tourism and its related industries. Much effort is directed to the maintenance and improvement of wildlife habitat as it is habitat which determines the potential in wildlife numbers.

Moose Management

The moose population appears to be stabilizing at about 80,000 animals, south of the 11th base line. Strategies to reduce the harvest of moose by adjusting the hunting seasons have not yet allowed herds to rebuild. The development and evaluation of new harvest strategies are now under way, including that of hunter control for implementation when appropriate.

Standards and guidelines for moose habitat management have been completed. The management of moose habitat has been undertaken by wildlife and forest managers. An audio-visual slide show, entitled "Monarch of the North," is now available for the instruction of both staff and public on moose and moose management.

Deer and Bear Management

The development of policy options for deer management is under way.

The number of deer in the forested areas of the northwest fluctuates with winter conditions, and that in the forested areas south of the French and Mattawa Rivers is declining as a result of decreasing habitat quality and overharvest. Habitat management, concentrated on increasing winter and summer food supplies and winter shelter areas, is required for an abundance of deer. A change in the strategy of harvesting deer is being considered. In the agricultural south, the number of deer is holding or increasing and methods are sought to allow the harvest of deer.

Black bear numbers, though difficult to assess, are believed to be constant. Nuisance bear are trapped and released elsewhere whenever possible, or destroyed if necessary. Hunters take about 4,000 bears per year, and the number of bear hunters is increasing.

Upland Game Management

Development of population inventories for selected small game species is under way. A crowing cock survey for pheasant was developed and implemented in co-operation with field staff.

A comprehensive reassessment of raccoon hunting and trapping seasons was initiated and is in progress.

Most populations of small game species appeared to be healthy. Hungarian partridge, pheasant, woodcock, European hare, cottontail rabbit and snowshoe hare are expected to be abundant enough in the upcoming hunting season. Ruffed grouse continued to remain at relatively high population levels in most areas. Severe winters have resulted in a high mortality of bobwhite, however.

Waterfowl Management

A program to produce a wild breeding population of Canada geese in southern Ontario, under way since 1968, has been successful and produced an estimated 20,000 of these birds as breeders or potential breeders.

Snow goose breeding success in the Northwest Territories is expected to be poor in 1978 due to persistent snow cover during the nesting season. Fall populations of the duck species that breed in the Canadian prairie are predicted to be about average. Generally, populations of Arctic-breeding ducks may be somewhat reduced.

Non-Game Management

This program includes work on threatened and endangered species, non-game species and the interpretation of wildlife resources.

Nine species were designated as endangered during 1977, bringing to 13 the number of species now officially designated as endangered under The Endangered Species Act.

Studies undertaken during 1977 included work on the bald eagle, piping plover, white pelican, black rat snake, Kirtland's warbler and the West Virginia white butterfly. The initial attempt to reintroduce peregrine falcons at former eyrie sites was undertaken.

Wildlife interpretation weekends were held at Long Point, Presqu'ile, Hawk Cliff (near St. Thomas), and at the Toronto waterfront. Major articles were prepared on the peregrine falcon work and on the entire endangered species program. Exhibits on the non-game program were completed and work commenced on the interpretation facilities at the Upper Canada Migratory Bird Sanctuary near Cornwall.

Wildlife Management Areas

Thirty-two Provincial Wildlife Areas are maintained in southern Ontario to provide wildlife-based recreation on public land and similar recreation is available on ten Wildlife Extension Landowner Agreement Areas established by agreements with landowners. Habitat is managed to produce wildlife for viewing, hunting and the maintenance of wildlife populations.

Wildlife Services

Ontario's Conservation Officers are responsible for the enforcement of The Game and Fish Act and various other Acts administered by the Ministry of Natural Resources. They are also appointed as Fishery Officers under the Fisheries Act of Canada and as Game Officers under the Migratory Birds Convention Act of Canada, which authorizes them to enforce these Acts and regulations thereunder on behalf of the Government of Canada.

During the past year, Conservation Officers laid a total of 8,142 informations under these Acts, resulting in 7,166 convictions. A total of 6,376 articles and game were seized from 6,096 persons. Of 20,067 alleged violators, 41 per cent were charged and 59 per cent were warned.

Planning

Many kinds of plans, including recreational, forestry, mining, housing and municipal development plans, have been reviewed to ensure that wildlife interests are an integral part of planning.

A cost-benefit study of provincial wildlife areas was undertaken as a preliminary part of a systems planning process for these areas. A study of the implications of the use of native birds of prey in falconry was begun. A proposal for tax reductions for owners of wetlands and habitats of endangered species was provided at the request of TEIGA for use in the proposed revision of property taxation.

Broad priorities were established for protection of major migratory bird habitats as part of a task undertaken by eastern provinces and the federal government. The mapping of important migratory bird habitats in southern Ontario was initiated.

Staff continued to participate in studies of proposed large-scale developments which had the potential of affecting wildlife or wildlife habitat.

Wildlife Surveys and Records

This office files hunting and non-resident angling licences. Statistics on hunting, including participation rates,

hunter success and harvest, and socio-economic characteristics of participants, are obtained through mailed questionnaires. This information supplements data obtained in the field and forms the basis for wildlife management and recreation planning.

Furbearer Management

The 1976-7 trapping season saw an increase in the harvests of most species of furbearers and in the average prices received by trappers. The beaver harvest increased by almost 27,000 pelts to 153,393 with an average price of $26.41; 18,822 minks were harvested, their pelts averaging $16.00.

The most spectacular increase in the harvest was recorded for marten which doubled from the previous season to 40,363 pelts at an average price of $17.67. The muskrat harvest increased by 100,000 pelts to 532,749 at an average price of $5.11. The raccoon harvest continued to increase and amounted to 57,327 pelts with an average price of $21.39. Hunters sold the pelts of an additional 28,732 raccoons.

Altogether, 13,775 trappers sold pelts valued at more than $11 million.

Increasing numbers of trappers are attending trapping workshop courses given by the Ministry and the Ontario Trappers Association. A greater emphasis is being placed on longer workshops of several evenings in duration, and work has progressed towards standardizing course outlines.

Hunter Safety Training

The Hunter Safety Training Program was transferred from Information Services Branch to Wildlife Branch in 1977. The expansion of the program was continued in the areas of hunting ethics, wildlife management, wildlife identification and hunter-landowner relations.

During the year 1,008 certified hunter safety instructions trained 40,000 hunters, and the Ministry's hunting licence examiners conducted 36,000 hunting licence examinations. The Ministry's courses on Method of Instruction and Range Procedure Training were attended by 100 instructors.

Wildlife Research

Research seeks to fill out our knowledge gaps by investigations of population dynamics, behaviour, physiology, reproduction, diseases and parasites, and interactions between selected species and their habitats.

Investigations of mineral nutrition of moose suggested strong seeking for sodium, and possibly other elements, at natural mineral licks, and for iron and other substances contained in aquatic plants. Mathematical analysis of moose kill data yield a new and very useful means of estimating the hunting mortality incurred by a population.

Studies of the ecology of black bears continued at a high level. More than 50 radio-marked bears were contacted daily throughout the summer of 1977 to obtain valuable information on habitat use. Of five orphan cubs observed, four survived the summer, hibernated successfully, and emerged from dens in 1978.

Investigation of vector dispersal, part of the rabies research program, continued to provide interesting observations of short- and long-distance movements of red foxes and coyotes. The search continued for a suitable rabies vaccine to use in baits for large-scale field distribution.

Other studies included behavior of moose and deer, use of nest boxes by goldeneye and other ducks in northern Ontario, parasites and diseases of black bears, and numbers and reproductive success of polar bears. Publications on the polar bear studies and on long-term deer studies are in preparation.

Resource Development (Native People)

The resource development programs assist the native Indian people of Ontario in the use of renewable natural resources for their economic benefit. The following projects were carried out during the year under the Federal-Provincial Resource Development Agreement.

Fur. This program provides for the placement of Indian trappers on vacant trapline areas. Aerial surveys are conducted and maps showing live beaver colonies are supplied to the trappers. Transportation of supplies, equipment and furs is also provided.

Commercial Fish. Administrative and operational assistance is provided to native people in the Northwestern Region in their commercial fisheries activities.

Sport Fish. Lake surveys were conducted on seven lakes on the Garden River Reserve to determine their potential for sport fishing. A lake trout and brook trout management proposal was prepared for the development of a sport fishery in these waters.

Tourism. Six goose hunting camps were operated during 1977 by the Indian people along the James Bay and Hudson Bay coast. Three camps were operated solely by native people while three were provided with assistance and supervision by Ministry staff.

Hide Collection. In 1977, successful hunters provided 10,000 moose and deer hides for the native people of Ontario. The continuing success of this program is due to advertisements and hunter contacts made over the years. Presently, there are 4,000 native people involved in the craft program. It contributes significantly to their economy through the sale of handicrafts.

Timber. Assistance was provided to native people in the operation of various timber and lumbering operations, reforestation and regeneration programs. Complete timber management plans were developed for some reserve areas.

Planning. Representatives of Grand Council Treaty Areas #3, #9, Union of Ontario Indians and CORAID attend the Resource Development Committee meetings and assist in planning and determining program priorities. Indian Band Councils are contacted in regard to programs most beneficial to their needs.

Game Management. Studies to determine deer populations, mortality rates and range potential were conducted on the Wikwemikong Reserve on Manitoulin Island at the request of the Band Council. The objective of this program is to provide guidance to the band in the management of deer on the Reserve land. (Last year for project).

Lands and Waters Group

The Lands and Waters Group was established on December 1, 1977, with the addition of two branches to the former Division of Lands which had three constituent branches: Lands Administration, Land Use Co-ordination, and Surveys and Mapping. The two new branches are Conservation Authorities, and Engineering Services which was previously within the former Field Services Division.

Lands Administration Branch

Crown lands within the Province, including mining lands, are administered by the Branch. Its responsibilities include acquisition of private lands where necessary for Ministry programs.

Land Aquisition

The Land Acquisition Section is responsible for purchasing private lands required for various Ministry programs such as public recreation and wildlife management. It provides assistance in setting acquisition priorities, overseas and approves each purchase, and maintains a computerized inventory of all property acquired. Newly acquired lands are managed on an interim basis to assure optimum benefits until they are incorporated into Ministry programs. More than 625,000 acres have been acquired since the Section's formation in 1962 – 12,342 acres in the past year.

Mining Lands

Under The Mining Act, the Mining Lands Section is authorized to manage Crown mining lands as follows:

(a) Ruling on mining leases and exploratory licences of occupation (large tracts of land where normal claim staking is not feasible);
(b) Issuing permits for sand and gravel removal;
(c) Setting policy, formulation and interpretation of statutes;
(d) Auditing all mining claims recorded in recording offices;
(e) Auditing all quarry permits issued in recording offices;
(f) Assessing all geophysical, geological and other technical survey reports submitted for assessment work, and
(g) Withdrawing Crown lands from any form of disposition.

Under The Beach Protection Act the Section licenses the removal of sand or gravel from beaches, banks or waters of all lakes and streams and regularly monitors such operations. These licences cover removals by private individuals as well as large commercial extractions which provide considerable revenue in the form of royalties. Liaison with the Ministry of the Environment and field staff specialists ensures that erosion or significant damage to the fish population or local ecology is prevented. Municipalities operating for municipal purposes are exempt from Ministry licensing and supervision.

The program of rehabilitating depleted pits and quarries on Crown lands throughout the Province has been temporarily suspended due to monetary constraints.

The most significant event of the year for this Section was the issue of a 21-year mining rights lease, No. 103293, dated February 1, 1978, to Onakawana Development Limited to produce coal and methane gas from 12,699 acres in the District of Cochrane.

Three exploratory licences of occupation were granted as follows: Prospection Limited, 1,300,000 acres, James Bay Lowlands; Hudbay Mining Ltd., 411,000 acres, Cochrane District; and Kerr-Addison Mines, 201,500 acres, Cochrane District. These companies are required to spend more than $2 million collectively on exploratory work during the next three years. The licences cover all minerals except petroleum oil, coal and natural gas.

Public Lands

The Public Lands Section has two primary functions: management of the Province's 222 million acres of Crown land outside provincial parks, and disposition of rights in public lands and water.

Land management includes control of uses and users (75 million "user occasions" per year for recreation alone); the operation of garbage and litter control systems; the control of unauthorized occupations; the overseeing of construction of roads, pipelines, etc., on Crown land; and control of development on private lands in restricted areas.

Land disposition encompasses the granting of rights (ranging from freehold to agreements for use of waters for power generation) to a wide variety of clients – individuals, corporations, other governments, and government agencies. It includes the follow-up administration of transfers, renewals, cancellations, etc., of tenure documents including leases in provincial parks.

The Section co-ordinates land-related training of staff and the provision of information and advice on public lands to the general public.

Section programs are implemented by field office staff. The main office group formulates operational policy, directs field offices through policy and procedure directives, and monitors field performance through periodic field audits.

Starting this year, Crown cottage lots, offered by lease only in recent years, will be made available for purchase by eligible applicants including Canadian corporations. Lessees of existing cottage lots in subdivisions will be allowed to obtain freehold title to their lots.

Titles

The Titles Section prepares and maintains a written registry of the legal documents required for the ultimate disposition of Crown lands. It is responsible for the maintenance of the Ministry filing sytem that is used in conjunction with the registry for the administration of the Crown land base of the Province. A program to computerize the indexes of these land parcels, their survey plans and related file records has begun and the target for completion in 1984.

This Section levies mining acreage tax and carries out procedures necessary to effect forfeiture to the Crown of alienated mining lands when the owners default.

Office of Indian Land Claims

The Office of Indian Land Claims is responsible for researching and responding to Indian land claims and other Indian land problems. It also is responsible for keeping the Ministry (and Government) aware of the possible extent of future land claims and their significance.

The Office develops Ministry positions on these claims and prepares recommendations to Cabinet. It undertakes research for these in consultation with other ministries, the Federal Government, and Indian bands and their associations. On the direction of Cabinet, it negotiates the settlement of valid land claims with the Indian people involved.

Land Use Co-ordination Branch

The Land Use Planning, Land Use Liaison, Special Projects and Plan Review Sections, which comprise the Branch, continued to co-ordinate Ministry planning, assisted other ministries and planning agencies such as municipalities with land-use plans, and maintained a sensitive-areas recording system. The Branch updated environmental assessment procedures for Ministry undertakings and co-ordinated Ministry environmental assessment responsibilities.

Strategic Land Use Plan

Co-ordination of the Regions in the preparation of the Strategic Land Use Plan is a major priority with the Branch. The strategic plan is being done as a three-phase program; phase one is background information, phase two is policy formulation and phase three is the plan. When completed this plan will guide all subsequent, more detailed plans of the Ministry.

Phase one for Northeastern Ontario and for Southern Ontario were finalized and published; however, neither report was released in 1977-8.

Phase two for Northwestern Ontario was published, released and reviewed by the public. A draft of phase three was prepared for Northwestern Ontario.

Land Use Planning

The Branch again worked closely with the Ministry of Treasury, Economics and Intergovernmental Affairs on the Parkway Belt-West Land Use Plan and the Northwestern Ontario Development Strategy, and with Ontario Hydro on transmission-corridor and generating-station locational studies. It also maintained close co-operation with the Ministries of Environment, Industry and Tourism, and Agriculture and Food.

On other government levels, planning assistance was given to such projects as the Central Waterfront Plan under the auspices of Metropolitan Toronto*, Provincial Regional Development Strategies, and the preparation of official plans by several municipalities, among them the reorganized County of Oxford, Renfrew County, Manitoulin Planning Area, and the Sault North Planning Area.

The Ministry continued to prepare local land-use plans. The Lake of the Woods General Land Use Plan was released jointly by the Ministers of Natural Resources and Housing. In addition the Ministry provided substantial input to the Royal Commission on Electric Power Planning and the Niagara Escarpment Plan.

Plan Review Activity

Development proposals from individuals, private concerns, other government agencies and municipalities can have a significant effect on Ministry objectives and programs. It is important to ensure that such proposals are compatible with, and have no seriously adverse impact on, the Ministry's objectives or programs. Proposals originate throughout Ontario but development pressures are most vigorous in the southern regions. In reviewing and commenting on development proposals, the Ministry makes a valuable contribution to the maintenance of a good-quality environment and the continuing productivity of provincial resources.

The number of plans reviewed increased by 15 per cent over the previous year to a total of 7,735. More official plans, official plan amendments, subdivision plans, severance applications and zoning by-laws were reviewed than in previous years.

**This responsibility has now been transferred to the Conservation Authorities Branch.*

Lake Planning

The Ministry's new three-year cottaging initiative, to terminate in 1977-8, has been extended. The program is intended to increase the number of cottage lots provided on Crown land in northern Ontario and determine at what level the program can be maintained.

Comprehensive lake plans were prepared by field staff following guidelines in the Branch's Lake Planning Manual which underwent further revision on the basis of experience gained during the previous two field seasons.

A previous study on rivers and small lakes is being incorporated into a total water-based recreation methodology for District planning purposes.

Environmental Assessment

The Branch continued to develop class environmental assessments for a number of undertakings. The task of continually refining the Ministry's responsibility under The Environmental Assessment Act was also an important part of the Branch activity.

Special Land Use Related Projects

The Branch provided Ministry co-ordination for two new land-use related projects: the Reed Proposal and the Royal Commission on the Northern Environment. It continued to co-ordinate the Ministry's participation in the Lakeshore Capacity Study.

Surveys and Mapping Branch

The Branch functions as a service agency in arranging for various types of surveys to be performed and for a wide variety of maps to be produced for the Ministry, other ministries, governmental agencies and public use. The Branch is made up of seven units as described below.

Mapping Services

During the year, the Unit continued its technical support of those aspects of Government programs requiring mapping expertise and maintained its efforts to co-ordinate the mapping activities of the Ontario Government, its agencies and municipalities.

A formal proposal for a provincial basic mapping policy and program was made, and on July 20, 1977, the Government established the policy that prime responsibility for the basic mapping policy in Ontario should be assigned to the Minister of Natural Resources who should develop basic mapping programs, maintain the integrity of the provincial referencing grid, and negotiate respective responsibilities for basic mapping between levels of government.

This Ministry was directed to chair a study group of the principal map-using ministries to identify current provincial spending levels for base mapping and to outline an implementation plan for the proposed policy. The study group presented its first report to the Management Board of Cabinet by November 15. It recommended that the Province be adequately mapped within 13 years. Negotiations for the funding of the program have commenced.

The Ministry of Northern Affairs, through its regional priority program, agreed to make funds available over three years to provide some very necessary base mapping in Northern Ontario and also to bulk-test the Ontario mapping

program. Using these funds, contracts were let for the analysis and installation of horizontal and vertical control in the Wawa-Sault Ste. Marie-Mattawa-Haileybury block, and also for trial mapping in the Timmins, Opasatika, Cobalt and Hornepayne areas.

Map-standards testing was continued in southern Ontario, with contracts let for mapping in the London-Simcoe area, and in the Niagara Peninsula.

Surveys

Re-survey of township boundaries, carried out by surveyors in private practice under agreement with the Ministry, continued at the same level as in previous years.

The number of cottage lots laid out in plans of subdivision was increased to meet the targets of the cottaging initiative.

Survey service to other Branches and information and Crown survey records were provided as requested.

Control survey installations, under agreement with several municipalities, were carried on and some completed. Negotiations for new agreements are pending.

Drafting Services

The Unit provided general drafting and mapping services and graphics in support of Branch and Ministry programs. It maintained a graphic inventory of timber, minerals, oil, gas, land and other resources.

Cartography

Responsibility for the production and maintenance of Ontario's topographic, territorial and geological map series lies with this Unit. Scientific, recreational and administrative maps for both government and public distribution, plus a variety of brochures and booklets related to resources and recreation programs of the Ministry, were produced during the year.

Manpower and expertise was supplied towards the monitoring of the Ontario Basic Map Series of maps produced by the private sector under contract to the Ministry.

Geographical Referencing

Work continued on the development and testing of thematic application projects using digital technology. A report was prepared on Cartographic Data Structures for Thematic Applications of Automated Cartography. Several experimental digital forest resource maps were produced for analytical purposes. A report, Computerization of land Indexes and the Use of Geocodes in the Ministry of Natural Resources, was prepared and published.

The Interministerial Committee on Geographical Referencing was formed to provide a forum for discussion and exchange of information on geographical referencing activities in the Provincial Government and to develop geographical referencing standards.

The Ministry's horizontal control survey multi-purpose analysis of network observations and reductions computer program (MANOR) became operational.

Development continued on the provincial Horizontal Control Survey Data Bank.

Nomenclature

This Unit is responsible for collection of, research into, and processing of geographical nomenclature and submissions to the Ontario Geographic Names Board for consideration as official names for Ontario government use. The Unit also functions as the Board's secretariat. Board recommendations are submitted to the Minister for approval.

Three new members were appointed to the Board by the Lieutenant-Governor in Council, September 28, 1977, and two former members were reappointed.

The publication, *Naming Ontario: A Guide to the Collection of Geographic Names,* was issued in September, 1977.

The field program was expanded in 1977 and 1978 in response to accelerated federal NTS map production requiring updated geographical nomenclature for 64 new and revised maps and charts covering Thunder Bay, Dryden, Sioux Lookout, Kenora, Atikokan, Ignace and Fort Frances Districts in 1977 and 96 covering nine Districts north of Lake Superior in 1978.

Short-term surveys covered map and chart areas of Owen Sound, North Bay, Wingham, Kincardine, Durham, York, Halton, Peel, St. Catharines, Arnprior and Carleton Place.

The Executive Secretary of the Board attended the Third United Nations Conference on the Standardization of Geographical Names in Athens, August-September, 1977, and presented two papers: *A National Policy for the Bilingual Treatment of Geographical Names on Canadian Maps and Field Collection of Geographical Names in the Province of Ontario, Canada.*

Ontario Centre for Remote Sensing

The Centre conducts projects applying the analysis of aerial photography, other forms of aerial imagery, and satellite imagery to resource management and development. Projects are undertaken at the request of ministries, other Ontario Government agencies, and the private sector.

To complement this function, the Centre also conducts research on the development of new methodologies of remote sensing application and on the practical applicability of new forms of remotely-sensed data. More than 50 research and applications projects were undertaken this year.

The Centre began the completion of the surficial geology and wetlands mapping of Ontario in 1977-8, commencing in the far northwest of the Province. Field sampling was completed for an area of 250,000 km^2, and the preparation of manuscript maps for the area was begun.

Research into the development of two remote sensing methodologies for the assessment of forest regeneration success was continued.

The Centre conducted preliminary testing of a methodology of forest typing by digital analysis of satellite data. Favourable results on the practicality of the method encourage further investigation.

The Centre continued a comprehensive program of forestry-oriented projects, such as research on the aerial forest sampling methodology, detection of forest damage by disease and infestation, and mapping of old and recent forest fire sites.

Numerous projects were undertaken to assess building heat loss by aerial thermography, and to provide instruction and advice on the use of the thermographic methodology. Thermographic coverage was obtained of Lindsay, Peterborough, Stratford, Guelph, Brockville, Kingston, St. Catharines, Windsor, Kapuskasing and Cochrane.

The first presentation on heat loss and insulation performance, as interpreted from thermography, was made to homeowners in the town of Lindsay.

Presentations on the usefulness of remote sensing and on the Centre's new developments were given to Ministry personnel, other ministries, university audiences and representatives of private industry. Advice and assistance in the use of remote sensing imagery and methods of analysis were provided to many hundreds of visitors to the Centre. Scientific papers were delivered at national and international remote sensing conferences.

In 1977-8, the Centre acquired the capability for digital image analysis which will permit the extraction of much finer detail from satellite data and greatly broaden the scope of applicability of spaceborne remote sensing in Ontario.

Engineering Services Branch

The objectives of the Branch are to provide for the control of surface waters and the regulation of improvements; to design and construct water management facilities to prevent flooding and erosion; to provide an engineering and construction support service for Ministry programs; to co-ordinate resource access construction and maintenance; and to provide a vehicle fleet and equipment management system.

Pre-Engineering and Design

Projects included dams at Wolf Lake, Sideburned Lake, Upper Canada Bird Sanctuary and Barnum House Creek; a fish pass at Thornbury; and docks at Wabigoon Lake and Manitouwadge.

Soils investigations were carried out by consultants for Sideburned Lake, Berry Lake and Hullett Marsh dams, Wabigoon Lake and Manitouwadge docks, and Turtle River Bridge.

Construction

Water control structures were built at Methune Lake, Dryberry Lake and Barnum House Creek. The Port Albert Fish Pass, started the previous year, was completed and a beginning was made on the rehabilitation of Sideburned Lake Dam. The Georgina Island Dock was completed and new docks were built at Wabigoon Lake and at Manitouwadge. Bridges were built at Pickerel River in Parry Sound District and on the Olrig Road in Nipissing in support of the resource access road program. Cannifton Dam, on the Moira River upstream from Belleville, was removed to prevent its possible collapse.

About one and one-half miles of the Goulais River, a few miles north of Sault Ste. Marie, were cleared of floatwood to remove a possible cause of flooding and to allow pleasure boats to navigate the main river channel.

Maintenance of Hydraulic Structures

The Branch provides routine maintenance for some 300 Ministry-owned dams and a variety of navigation aids such as boat transporters, marine railways, rollerways and mechanical portages, as well as channel marker buoys in several lakes in Muskoka.

Major repairs were made to the docks and canoe channel at Port Carling, to dams at Lutterworth and Digby, and to docks at Trout Lake, South Baymouth, Temagami, Little Current and Wade's Landing. Shore protection works at Elk Lake and Parry Sound were repaired. At Rydall Bank, timber piles, which had originally supported a bridge but were only serving to catch debris and cause erosion, were removed and eroded areas were filled. Minor maintenance was carried out on facilities at 68 other locations.

Water Management

The Branch provides for the operation of Ministry-owned dams for recreation, fish and wildlife protection, flood and erosion control, and Ministry service. It also regulates construction of private dams, diversions, channelization and other water control structures under the provisions of The Lakes and Rivers Improvement Act.

Two hundred and twenty-one location approvals were granted for dams (48 per cent of the total), diversions and channelization (36 per cent), and other water control projects (16 per cent) by district offices, an increase of 13 per cent over last year. Twenty-three applications were refused and five inquiries held under the Act. One Minister's order was issued for removal of an unauthorized dam.

Ninety-two plan and specification approvals were issued for dams (53 per cent of total), diversions and channelization (37 per cent), and other water control works (10 per cent) by regional offices.

Approximately 650 investigations were made of water regulation problems involving construction, operation and maintenance of private dams and other water control works.

Great Lakes water levels and flows are continuously monitored through reports and information obtained from the International Lake Superior Board of Control and the International St. Lawrence River Board of Control.

The Branch represents provincial interests on the Lake of the Woods Control Board in the regulation of Lake of the Woods and Lac Seul, and on the Ottawa River Regulation Planning Committee. The latter is developing recommendations for regulation of the Ottawa River, an operational application of a forecast model, development of a flood warning system, a liaison mechanism with St. Lawrence River regulation, and an Ottawa River Operating Committee.

Great Lakes Shore Management

The Branch aids in the development of shoreland management policies and provides technical expertise for the alleviation of flood and erosion damage and other detrimental environmental effects along Great Lakes shores.

Current efforts are aimed at implementing recommendations presented in the *Canada/Ontario Great Lakes Shore Damage Survey Technical Report*, released in 1975. The main purpose of the survey was to compile data detailing the extent of the 1972-3 damage, to provide information on shore characteristics, and to make shoreland management recommendations.

A federal-provincial co-ordinating task force has been given the responsibility of directing follow-up programs to implement the Technical Report recommendations. This year, flood and erosion-prone area mapping has been prepared for the Great Lakes shore, extending from Ausable Beach on Lake Huron to Gananoque on Lake Ontario. The mapping and accompanying users guide were distributed jointly with the Ministry of Housing to municipalities and Conservation Authorities as planning aids to regulate land use within flood and erosion-prone areas. The project was completed jointly by Fisheries and Environment Canada and Ministry of Natural Resources with project management by the Branch.

A shoreland management study is presently under way in response to the Technical Report recommendation that methods be developed to evaluate shoreland management alternatives to mitigate flood and erosion damage. The three basic alternatives investigated are land-use regulation, public acquisition and structural protection. A 30 km length of Lake Erie shoreline in Gosfield South and Colchester South Townships is being used to develop and test methodologies.

Shoreland management alternatives will be assessed on the basis of land value, ownership, cost of protective works, erosion and recession rates, flood probability, related cost-benefit studies, and qualitative environmental evaluations. The results of the study will be generally applicable along Great Lakes shores and will be circulated to municipalities, Conservation Authorities and planning agencies.

Monitoring of shoreline processes has been undertaken as recommended by the Technical Report to ensure maintenance of current information on shore characteristics. Ground profiles are taken annually and after major storms at about 165 permanent erosion stations established on the Great Lakes.

The Branch is a member of the Working Committee of the International Diversions and Consumptive Uses Board

and of the Working Committee and Coastal Zone Subcommittee of the International Lake Erie Regulation Study Board. These study boards were established by the International Joint Commission on the Great Lakes. The Lake Erie study has adopted models developed by the Branch as a base for a common Canada-United States flood and erosion damage evaluation methodology.

Resource Access Roads

Co-ordination and consultation were provided for the construction and maintenance of forest access roads, and assistance is given on an ongoing basis to the Northern Ontario Resource Transportation Committee secretariat.

A total of 5,608 miles of forest access, Ministry service, public transport and agreement forest roads were maintained. This is a slight increase over the number of miles maintained in the previous year.

The Ministry shared, by agreement, the cost involved in maintaining 434 miles of private forest roads constructed by industry.

The Ministry of Northern Affairs provided funding for and reconstruction in southern Ontario resulted in the completion of 44 miles.

The Ministry of Northern Affairs provided funding for the construction and reconstruction of the following in support of Ministry programs in northern Ontario:

1.	Normal Program – forest access roads and bridges	202 miles
2.	Regional Priority Budget – forest access roads	20 "
3.	Northern Ontario Resources Transportation Committee	
	(a) forest access roads, bridges and other projects	29 "
	(b) winter roads (Round Lake)	35 "
	(c) snowmobile trails	100 "

Provincial Response to Flood Emergencies

The Ministry was designated "lead Ministry" by Cabinet in 1975 to co-ordinate the response of the Government of Ontario for flood emergencies. The Ministry appointed a Provincial Co-ordinator and established a program under which district managers are responsible for developing district plans for mobilizing, co-ordinating and delivering the available resources of this Ministry and other provincial ministries to flood emergencies declared by the Minister. The Branch administers the program on behalf of the Provincial Co-ordinator.

Fleet and Mechanical Equipment

The Branch maintains a vehicle fleet and equipment management system which permits planned acquisition, disposal, repair and replacement to ensure safe operation of Ministry vehicles and mechanical equipment.

The Ministry fleet increased by 30 vehicles, nine snowmobiles, two trail bikes and eight tractors and all-terrain vehicles. This raised the fleet fixed complement to 1,613* vehicles, 528 snowmobiles, 318 tractors and all-terrain vehicles, and 887 boat and equipment trailers.

The effective size of the operating fleet is increased during summer months by taking delivery of new vehicles in the spring, but holding vehicles to be replaced until fall. Replacement equipment purchased included 181 vehicles, 42 snowmobiles and eight tractors.

**Over-all fleet size decreased due to transfer of vehicles to other ministries, e.g., Northern Affairs.*

Conservation Authorities Branch

The objective of the Branch is to encourage the conservation and use of water and related land resources by Conservation Authorities by providing policy, funding assistance, and management and planning direction to the Authorities.

The 38 Authorities cover most of Ontario south of the Laurentian Shield as well as sections of northern Ontario around North Bay, Sault Ste. Marie, Sudbury, Timmins and Thunder Bay. They undertake a wide variety of programs to further the conservation, restoration, development and management of the renewable, natural resources of their watersheds.

The Conservation Authorities Act ensures a provincial-municipal arrangement. The membership of each Authority includes representatives of all municipalities situated wholly or partially within the watershed and up to three members appointed by the Province. Consequently, the initiative and sense of responsibility of the local communities are combined with the technical and financial resources of the Province to protect and develop the watersheds of Ontario.

A Conservation Authority is formed as a result of a resolution from two or more municipal councils that petition the Minister of Natural Resources to convene a meeting for that purpose. If the vote of the municipal representatives is favorable, the Authority is established by an Order-in-Council. The Authority's boundaries are then defined on a watershed basis. They may include a single watershed, such as the Grand River system, or a number of smaller and adjacent watersheds such as the Cataraqui Region.

Conservation Authorities place a particular emphasis on water and related land management. They are also involved with auxiliary programs oriented to land use, forestry, fish and wildlife, outdoor recreation and conservation education.

All programs undertaken by the Authorities must have the approval of the Minister of Natural Resources. Each program involves a wide variety of resource management projects that receive financial assistance. Provincial grants are provided through the Conservation Authorities Branch. In some water management projects, the federal government may also participate. The Authority raises its share of the funding by levying its member municipalities and by receiving aid from other sources.

Fourteen Authorities employ a general manager or director of operations to supervise their programs under the direction of a chairman. Resources managers are supplied by the Province in 24 Authorities, including three instances where the services of a manager are shared by two Authorities.

Conservation Authorities relate to the Ministry's field organization at the regional level. Four regions have program supervisors to assist the Authorities in planning and implementing their resource management programs.

Administration

A new grant structure, that updates the formula to reflect current priorities within the Conservation Authorities program, was approved in 1977 and became effective in 1978. The basic grant rate for administration remains at 50 per cent, while the basic grant rate for the water and related land management program was raised from 50 to 55 per cent. No other rates will apply within this program. The conservation and recreation land management program basic grant rate remains at 50 per cent; however, the supplementary grant rates will be phased out by 1981.

The junior conservationist award program introduces students between 16 and 18 years of age to a spectrum of conservation values and to technical conservation skills. The 1977 summer program involved 35 students who undertook projects proposed by Authorities in five watersheds.

Under the Experience '77 program, the 1,250 students

Branch Administration Costs

Field Services	$ 887,718.00
Program Planning and Land Management	355,996.00
Water Management Engineering	639,671.00
Junior Conservationist Program	61,822.00
Field Surveys	49,512.00
Employee Benefits	194,293.00
TOTAL	2,189,012.00

Grants to Authorities, 1977-78

UNDER THE CONSERVATION AUTHORITIES ACT

Ausable Bayfield C.A.	$ 312,271.93
Cataraqui Region C.A.	548,073.37
Catfish Creek C.A.	44,335.19
Central Lake Ontario C.A.	635,021.93
Credit Valley C.A.	2,411,728.18
Crowe Valley C.A.	606,274.39
Essex Region C.A.	437,989.34
Ganaraska Region C.A.	261,533.05
Grand River C.A.	3,306,050.79
Halton Region C.A.	1,199,413.20
Hamilton Region C.A.	1,143,901.18
Kettle Creek C.A.	211,260.99
Lakehead Region C.A.	291,847.14
Long Point Region C.A.	288,221.19
Lower Thames Valley C.A.	514,552.93
Lower Trent Region C.A.	266,437.20
Maitland Valley C.A.	361,731.32
Mattagami Region C.A.	441,754.29
Metropolitan Toronto & Region C.A.	4,371,070.38
Mississippi Valley C.A.	700,351.85
Moira River C.A.	1,075,284.51
Napanee Region C.A.	164,467.14
Niagara Peninsula C.A.	485,228.71
Nickel District C.A.	303,441.55
North Bay-Mattawa C.A.	44,936.47
North Grey Region C.A.	451,802.59
Nottawasaga Valley C.A.	252,467.00
Otanabee Region C.A.	315,026.38
Prince Edward Region C.A.	142,936.60
Raisin Region C.A.	120,057.77
Rideau Valley C.A.	736,765.25
Sauble Valley C.A.	115,628.25
Saugeen Valley C.A.	545,766.59
Sault Ste. Marie Region C.A.	848,861.71
South Lake Simcoe C.A.	610,389.88
South Nation River C.A.	526,323.14
St. Clair Region C.A.	1,201,648.79
Upper Thames River C.A.	1,188,442.38
TOTAL	$27,483,294.55

UNDER EXPERIENCE '77

Grants to Conservation Authorities	$ 2,047,285.87

hired by the Branch and the Conservation Authorities gained valuable insight into resources management by undertaking projects such as the development of nature trails in conservation areas, restoration of historical sites, removal of debris from water courses, construction of river-bank retaining walls, and compilation of wildlife inventories.

Water and Related Land Management

Programs within this section relate to water management and flood control and therefore include projects such as flood plain mapping, environmental assessment, dams, channel improvements, erosion control structures, and water quality monitoring.

A flood control diking project on the Pretty River in Collingwood was completed by the Nottawasaga Valley Conservation Authority.

The Halton Region Conservation Authority undertook Phase Four of the Roseland Creek Channelization project in Milton.

Acquisition of valley lands in Peterborough was initiated by the Otonabee Region Conservation Authority as part of a flood plain management program.

Numerous flood plain mapping and acquisition projects were carried out by several Authorities.

The South Lake Simcoe Conservation Authority carried out preliminary engineering studies for water control projects in Newmarket, Lefroy/Bell Ewart, Holland Marsh and Schomberg.

The Essex Region Conservation Authority initiated construction of the Windsor Seawall.

Major channel improvements were carried out in the Credit Valley, Lower Thames Valley and Grand River Authorities.

The St. Clair Region Conservation Authority commenced construction of the Sarnia Seaway Centre (Phase One, which is an erosion control retaining wall).

A program of extensive land acquisition was carried out by the Upper Thames River Conservation Authority for the Glengowan Dam and Reservoir, and by the St. Clair Region Conservation Authority for the Wilkesport Dam and Diversion.

Reconstruction of the Town Creek channel was begun by the Mattagami Region Conservation Authority.

Final design was completed for the Nickeldale Reservoir by the Nickel District Conservation Authority.

Construction of the Marmora Dam was completed within the Crowe Valley Conservation Authority.

The majority of construction of the Belleville Ice Control Dam was carried out by the Moira River Conservation Authority and the dam was operational in the winter of 1977.

The Sydenham Dam, located within the Cataraqui Region Conservation Authority, was completed.

The South Nation River Conservation Authority began construction of the Chesterville Dam.

Phase One of the Graham Creek Flood and Erosion control project in Ottawa was completed by the Rideau Valley Conservation Authority.

Construction of the Lanark Dam, located within the Mississippi Valley Conservation Authority, was completed.

Progress was made on a flood control plan through channelization works on Highland Creek, and several watershed studies were carried out to update the plan within the Metropolitan Toronto and Region Conservation Authority.

Conservation and Recreation Land Management

This program includes projects related to land acquisition for conservation areas, development and landscape protection, reforestation and woodlot management, outdoor recreation, information and outdoor education, fish and wildlife inventories, and pollution abatement.

There were major capital developments in several areas. For example, Kettle Creek Conservation Authority undertook extensive development of a campground and picnic area just north of St. Thomas.

Lower Trent Conservation Area completed development of a greenbelt along the Trent River in Trenton.

The preparation and subsequent approval of master development plans for 16 conservation areas were carried through by the following Conservation Authorities: Grand River, Ganaraska Region, South Lake Simcoe, Central Lake Ontario, Lower Trent Region, Nickel District, North Grey Region, Sault Ste. Marie Region, Metropolitan Toronto and Region and Mattagami Region.

The St. Clair Region Conservation Authority acquired property for the St. Clair-Huron Waterfront Program and

initiated erosion control as well as the development of recreational facilities on the Lake Huron Shore north of Sarnia.

The North Grey Region Conservation Authority acquired two properties in the Owen Sound area for the Bayshore Development Project where the development of five major recreational nodes will be undertaken over the next few years. It also completed construction of the new Authority office.

The Essex Region Conservation Authority acquired 276.5 acres of valley land along the Canard River in Anderdon Township, south of Windsor. This land exhibits potential for a variety of water management and recreational and educational/interpretive activities.

The Grand River Conservation Authority acquired 116 acres of valley land for the enlargement of the Hanlon Creek Area in Guelph.

The Halton/Hamilton Region Conservation Authorities jointly acquired several properties along the Hamilton-Burlington beach strip for conservation and recreational purposes.

Rattray Marsh was acquired by the Credit Valley Conservation Authority and the Ashbridges Bay Waterfront Area was opened by the Metropolitan Toronto and Region Conservation Authority as part of the Lake Ontario Waterfront program.

The Niagara Peninsula Conservation Authority acquired property for the Wainfleet Wetlands Conservation Area in the Township of Wainfleet.

Under the information and outdoor education programs, The Kortright Centre for Conservation was completed by the Metropolitan Toronto and Region Conservation Authority and the Dundas Valley Trails Centre was completed by the Hamilton Region Conservation Authority.

The Raisin Region Conservation Authority constructed boat launching facilities, floating docks, and associated service buildings on Gray's Creek Conservation Area just outside Cornwall.

Aviation and Fire Management Centre

The Aviation and Fire Management Centre was established on February 1, 1978, with the amalgamation of Forest Fire Control and Air Service Branches. Main office elements were moved to the Air Service location in Sault Ste. Marie and the new Centre was scheduled to be operational by April 1, 1978. It is headed by a director who reports to the Assistant Deputy Minister for northern Ontario.

Fire Management

The 1977 occurrence of 2,049 fires was above the decade (1968-77) average of 1,867 fires per year. The 1,028,739 acres burned over in 1977 exceeded the average of 390,572 acres.

It was anticipated that the fire season would be a severe one as the 1976 fire occurrence was one of the worst on record for Ontario. The severity of that season was directly attributed to weather, and probably to the climatic changes in parts of the Province during the preceding three years. A number of firmly established drought areas were defined and no relief was expected before the 1977 fire season.

As was expected, the 1977 fire season started early and was explosive for the first few weeks. By the end of May, Ontario had experienced nearly 1,200 forest fires, almost double the number recorded for the same period in 1976. After this point, however, the weather pattern changed and a significant amount of rain fell over most of the Province during the remainder of the fire season.

All but 60 of the recorded fires occurred within the area of intensive protection. Despite this, the area burned in 1,989 fires was limited to 87,518 acres or 8.5 per cent of the total.

Fire Prevention

Under the enhancement program, a team was established to develop material and to spearhead an over-all fire prevention campaign.

An audio-visual slide-type presentation was developed on forest fire prevention, drought conditions in the 1976 fire season, and the expected 1977 fire season. Ten 60-second radio advertisements were made in English and French.

Other prevention materials were developed as follows: nine assorted prevention advertisements; a 60-second spot (animation) titled "The Most Dangerous Animal"; miscellaneous items such as bumper stickers; a pocket folder used for handout material, T-shirt decal and button; and a placemat. Several brochures were developed and a poster entitled "Burning up the Tracks" was designed for railway use. Seven adhesive vinyl signs with messages were added to the fire prevention material.

Training

In anticipation of a severe fire season, the Management Board of Cabinet provided special funds in advance of the fire season in response to an "enhancement program" developed by the former Forest Fire Control Branch. This program gave increased attention to Ontario's fire prevention, detection and initial attack capabilities.

Fifty additional unit fire crews (250 men) were hired under the enhancement program. To meet their training needs, three Fire Course Is, two more than normal, were held in the early spring.

A one-week weather course was conducted by seasonal weather technicians in late autumn. As an aid to this course, a slide/tape program, entitled "Intermediate Fire Behaviour," was produced.

Two AGA tronics Thermovision units purchased last spring were used in a two-day course held in Thunder Bay at the start of the summer. This course was presented jointly by the AGA tronics Ltd. and the Northern Forest Fire Research Institute with Ontario acting as host. Candidates from the eastern provinces to Saskatchewan were in attendance. Five one-week fire accounting courses were conducted during the winter and early spring.

Development Work

During 1977, 19 projects were undertaken in the area of equipment development and evaluation. The initial draft of the Forest Fire Suppression Equipment Standards Manual was made available to field staff in the spring of 1977. Two AGA tronics Thermovision 750 units and four Probeye infrared scanners were purchased and evaluated. Operational experience gained with these units has confirmed their value in mop-up operations. One project involved various types of sprinkler units and systems which were tested on prescribed burns and wildfires in two districts.

Other equipment development and evaluation projects were undertaken in the following areas: metric hose and quick-connect couplings, propane camp kit, burnout torches, back-pack pumps, root soaker tool, intake hoses, military water heaters, Gorman-Rupp Model 61½ FI-S282 fire pump, hose washers, hose repair, hose drying sleeve, and freeze-dry and frozen foods.

Work was continued on the following projects initiated in previous years: forest fire occurrence prediction, equipment inventory, detection aircraft utilization, provincial firelog, and the fire weather index calculation program.

Two projects were initiated. A fire behaviour prediction computer program for jack pine slash was developed to predict the behaviour of fire in jack pine logging slash. A pre-

scribed burn fire weather prescription analysis computer program was developed to provide an analysis of the occurence of prescribed weather conditions in previous years.

The Quetico Park Fire Ecology project, which was initiated in 1975 to provide information on the role of fire in Quetico Provincial Park, was terminated in 1977. The results of the project were documented in a series of eight reports.

A Fire Management Information project was initiated in 1976 to make a systematic study of the existing information system for fire management, identify problems and areas for improvement, and ultimately develop a master plan for the system. An interim report of the project findings was released in 1977.

Support was continued for three co-operative projects of the Great Lakes Forest Reseach Centre. These projects were in the areas of fire behaviour studies, wildfire ecology-effects studies, and precribed fire.

Aviation

With the purchase and conversion of seven De Haviland Otter aircraft from Crown assets, the Ministry fleet now stands at 45 aircraft. These aircraft were operated from 20 bases of which 11 were open the year round.

During the year, Ministry aircraft flew a total of 16,015 flying hours and delivered a total of 863 tons of cargo. Mercy and rescue flights accounted for 15.3 flying hours on 10 flights.

Finance and Administration Group

The Finance and Administration Division was renamed Group on December 1, 1977, and its six constituent branches were all named services branches to underline their supportive role in the Ministry's organization. Financial Management was renamed Financial Services Branch.

Administrative Services Branch

The Branch is a support group providing the adminstrative services that lie outside the personnel and financial fields.

Services Section

The responsibilities of the Section manager include the co-ordination of the Ministry's consumer service and energy conservation programs.

The co-ordinator of hospitality and parking is responsible for arranging Ministry functions and air transportation and co-ordinating Ministry parking.

Office Management

The unit is responsible for the following:

Design, issue and replacement of uniforms;

Continual updating of the Ministry's listings in telephone directories across the province;

Issue of identification cards and telephone credit cards to Ministry staff;

Distribution of government manuals and their revisions as well as the Ministry's policy and procedure directives;

The equipment inventory control system and main office equipment inventory control records;

The copy room which provides printing services for main office;

The mail room and messenger service; and

The telex operation at main office.

Data Processing

The unit accepts for keying the source documents for the Ministry's production data processing systems; schedules, submits and receives computer runs and sees that reports are distributed to user branches; maintains Ministry magnetic tape library; administers the Ministry's magnetic tapes retained in the library of the Central Computing Branch; maintains sufficient systems documentation to enable a contract programmer to carry out maintenance or minor revisions when requested by user branches; assists user branches in identifying computer problems and suggests means of rectifying problems; and keys data from source documents onto magnetic tape or tab cards in a predetermined format. The cards and tapes are interpreted by the Ministry's computer programs to produce the desired reports.

Public Service Centre

The Centre is responsible for the sale and distribution of Ministry publications, maps and aerial photographs. The maps handled include the Provincial Topographic series, the National Topographic series and releases of the Ministry of Transportation and Communicatons.

A Natural Resources information booth on the main floor of Whitney Block provides information to callers and handles general enquiries by telephone.

Supply Section

Supply Management

The unit is responsible for co-ordinating Ministry procurement policy and assisting Ministry offices on procurement matters. Duties include the issue and revision of directives of purchasing, preparation of standard purchase forms and specifications, assistance in preparing contract documents and tendering needs, and co-ordination of the purchasing officer training program.

Purchasing

The unit is responsible for the purchase of most goods and services for main office and for a few field offices. The unit acts as the Ministry's liaison with the Ministry of Government Services in the purchase of office furniture and furnishings. It establishes bulk purchase agreements and standing offers where feasible, and it offers assistance and guidance on the research and development of new sources of supply.

Central Supply Warehouse

The warehouse provides a warehousing and distribution service for items such as forms, publications, maps, uniforms and hunting and fishing licences. It is located at 733 King Street West, Toronto, and also has an office in the basement of Whitney Block. The office provides white prints for Ministry offices and the public.

Records and Forms Management Section

The Section is responsible for application of effective program techniques, as required by the Manual of Administration, and for the provision of technical advice to all sectors of the ministry.

Records Management

The unit is responsible for maintaining an accurate inventory of all records, records equipment and microrecording equipment; control over the initiation, maintenance, protection, retention and disposition of all Ministry records; conducting feasibility studies regarding all microrecord systems and submitting all proposals to senior management for approval and to Management board when necessary; conducting training seminars for the Ministry in all aspects of records management; and developing Ministry file classification plans.

Forms Management

The unit is responsible for establishing, maintaining and reviewing an inventory of Ministry forms; reviewing and approving all requests for forms printing; improvement in design of necessary forms by adherence to Ministry and government-wide design standards; providing forms analysis and design service to users; providing technical guidance to form originators; and conducting training seminars in forms management and design for Ministry personnel.

Accommodation Section

The basic role of the Section is the assessment of the accommodation needs identified by each program, the annual preparation of the Ministry accommodation plan for submission by the Ministry of Government Services to Management Board for funds, the co-ordination of services thus provided, and the control of individual accommodation projects. The role relates to the provision of new capital and leased facilities and the upkeep of existing facilities.

The year's tasks included the co-ordination of the reorganization and renovation of 75,000 square feet of floor space in Whitney Block.

Personnel Services Branch

Senior Administration Staff

March 31, 1978

Deputy Minister

Dr. J. K. Reynolds

Assistant Deputy Ministers

L. Ringham, *Northern Ontario*
W. T. Foster, *Southern Ontario*
A. J. Herridge, *Policy and Priorities.*

Executive Co-ordinators

J. W. Lockwood, *Forest Regeneration*
D P. Drysdale, *Program Management Evaluation*
A. H. Peacock, *Forest Resources Group*
G. A. Jewett, *Mineral Resources Group*
L. H. Eckel, *Outdoor Recreations Group*
J. W. Keenan, *Lands and Waters Group*
G. D. Spry, *Finance and Administration Group.*

Regional Directors

G. A. McCormack, *Northwestern (Kenora)*
R. A. Baxter, *North Central (Thunder Bay)*
J. R. Oatway, *Northern (Cochrane)*
W. G. Cleaveley, *Northeastern (Sudbury)*
K. K. Irizawa, *Algonquin (Huntsville)*
T. W. Hueston, *Eastern (Kemptville)*
R. M. Dixon, *Central (Richmond Hill)*
N. D. Patrick, *Southwestern (London).*

Directors

W. K. Fullerton, *Forest Resources Branch*
E. Markus, *Timber Sales Branch*
Dr. E. G. Pye, *Ontario Geological Survey*
Dr. T. P. Mohide, *Mineral Resources Branch*
K. H. Loftus, *Fisheries Branch*
R. J. Vrancart, *Provincial Parks Branch*
J. D. Roseborough, *Wildlife Branch*
J. McGinn, *Lands Administration Branch*
R. A. Riley, *Land Use Co-ordination Branch*
R. G. Code, *Surveys and Mapping Branch*
S. B. Panting, *Engineering Services Branch*
R. J. Burgar, *Conservation Authorities Branch*
W. L. Sleeman, *Aviation and Fire Management Centre*
G. A. Hamilton, *The Leslie M. Frost Natural Resources Centre*
A. C. Goddard, *Financial Services Branch*
H. B. Farrant, *Personnel Services Branch*
J. A. Queen, *Administrative Services Branch*
A. A. Ward, *Internal Audit Services Branch*
F. Moritsugu, *Information Services Branch*
Miss M. Mogford, *Policy Co-ordination Secretariat*
G. P. Elliott, *Management Improvement Office*

Head

Dr. D. Burger, *Ontario Forest Research Centre*

District Managers

W. D. Adlam, *Ottawa District*
R. P. Alton, *Wawa District*
E. N. Arbuckle, *Espanola District*
J. R. Bailey, *Lanark District*
R. G. Bailey, *Napanee District*
M. P. Barker, *Atikokan District*
L .L. Bronson, *Pembroke District*
W. R. Catton, *Cambridge District*
J. K. Cleaveley, *Geraldton District*
D. J. D'Agostini, *Fort Frances District*
P. R. Davidson, *Aylmer District*
J. E. Dickenson, *Niagara District*
C. Dionne, *Gogama District*
T. E. Dodds, *Ignace District*
I. B. Earl, *Maple District*
C. E. Emblin, *Hearst District*
H. P. Endress, *Dryden District*
E. W. Everley, *Red Lake District*
D. R. Fortner, *Chatham District*
O. Goodman, *Bancroft District*
C. R. Gray, *Lindsay District*
L. J. Haas, *Terrace Bay District*
D. L. Hagar, *Blind River District*
J. E. Hamilton, *Thunder Bay District*
G. O. Koistinen, *Nipigon District*
R. G. Lightheart, *Kapuskasing District*
W. J. Lovering, *Owen Sound District*
W. D. Mansell, *Wingham District*
R. B. McGee, *Simcoe District*
D. B. McGregor, *Kenora District*
D. E. McHale, *Sudbury District*
J. G. Minor, *Kirkland Lake District*
J. R. Morin, *Cornwall District*
D. J. O'Grady, *White River District*
A. F. Papineau, *Timmins District*
W. R. Peck, *Parry Sound District*
C. E. Perrie, *Sioux Lookout District*
E. Rogers, *North Bay District*
J. E. Rumney, *Temagami District*
J. R. Russell (Acting), *Chapleau District*
W. D. Schafer, *Huronia District*
J. H. Sellers, *Sault Ste. Marie District*
J. A. Simpson, *Algonquin Park District*
A. J. Stewart, *Moosonee District*
R. W. Tippett, *Bracebridge District*
R. H. Trotter, *Brockville District*

D. D. White, *Minden District*
G. A. Wright, *Cochrane District*
W. Vonk, *Tweed District.*

Total Staff

March 31, 1978	Regular	Probationary	Unclassified	Total
Main Office	815	91	284	1,190
Field Offices	2,799	159	1,767	4,725
Total	3,614	250	2,051	5,915

Total Complement of Positions	4,012
Vacancies in Complement	148
Regular and Probationary Staff	3,864
New Employees Hired 1977-78	250

Professional Staff

March 31, 1978

Biologists	123
Engineers	12
Economists	7
Foresters	288
Geologists	68
Park Planners	42
Scientists	55
Miscellaneous	54
Total	649
Resource Technicians	1,512
Licensed Scalers	1,165

Staff Turnover*

March 31, 1978

Deceased	9
Transferred	49
Released	1
Resigned	91
Dismissed	1
Retired	95
Total	246

*The ratio of separations to the total of regular and probationary staff at March 31, 1978, was 16 per cent.

Safety

Safety Programme Development Section was occupied with the following activities during the past year: training of main office staff in first aid; vehicle driver improvement; fire safety procedures; water safety; supervisory training in accident control; job safety planning; inspection of work areas and equipment vehicles; and public safety in Provincial Parks and on Crown lands.

The following numbers of staff were trained as noted:

Driver Training/Testing	2,570
First Aid Courses	1,723
Defensive Driving Courses	1,382
Interim Driver Testers	35
Workshop – Cardio Pulmonary Resuscitation	40
– Snowmobile	205
– Lateiner Accident Investigation	131
– Chainsaw and Axe	910
– Resuscitator	208
– Park Emergency Training	490
– Explosives Training	58
– General Safety Talks	162
– Total Workshops	292
Boating Safety Practices	122
Beach Patrol Swimming Test	23
Safety Audit Inspections (Provincial Parks), MNR buildings, facilities and equipment	1,242
Investigations (general injuries, motor vehicle accidents)	280
General Safety Training	
Experience '77	60
Junior Rangers	586
Foremen Training	37
General Public	190

Affirmative Action Program

The Women's Co-ordinator is responsible for providing assistance and guidance to managers at all levels in the implementation of the Government's policy on Affirmative Action by co-ordinating the Ministry's Affirmative Action Plan; providing research, information and other support services; encouraging the participation of female employees in program initiatives; and evaluating the results.

During the year, managers were assisted in establishing measurable outputs and related commitments; presentations were made to divisional and regional meetings; information packages were developed; interview and performance appraisal forms were refined and distributed; and individual consultations were held. A survey of attitudes of male and female employees was completed.

Work was begun for a report on job restructuring and job rotation. Technical assistance was provided to a Ministry employee researching the employment history of female foresters in Canada. The updating and indexing of a resource centre on equal-opportunity subjects was continued. A paper analyzing structural barriers to equal opportunity was produced.

The summer outreach program was continued as in the three previous summers. A session on equal opportunity was presented to 688 young women at 26 Junior Ranger camps. Post-session evaluations indicated that the students were now discussing these issues in their high school courses. A film on typical jobs in the Ministry, showing both males and females, is being produced in co-operation with Information Services Branch. Preliminary work on establishing an outreach recruiting network was undertaken and will be completed by September, 1978.

Success of the program is dependent in part on encouraging and involving female employees. A three-day conference was organized in April, 1977, for the 63 Affirmative Action representatives to begin the process of establishing practical objectives and activities and the basis for carrying them out. In consultation with management, terms of reference for the Affirmative Action Committee were established.

Branch and divisional representatives at main office formed a Queen's Park Affirmative Action Council. Activities undertaken by these representatives and the women in their units varied widely by district and region but included courses, regional meetings and work-shops, collection of work-force data, inventories of female employees, and special studies.

Slight gains have been made since the start of the program in the numbers of women employed in the Professional Module and the Clerical Services. All other categories remain relatively consistent. Women employees, who total 701, represent approximately 18 per cent of the Ministry's classified staff. Of these, 609 (87%) are in the Clerical and Office Services. Constraints on hiring have made it difficult to change this representation, given the professional and technical nature of the majority of positions within the Ministry.

The Ministry is receptive to, and supportive of, women as an integral part of both the professional and technical staff as demonstrated by the individual commitments of managers to the Affirmative Action Management by Results Plan for 1977 and 1978. Female summer students are being hired in all disciplines within the Ministry, and female graduates make up a fair proportion of the seasonal unclassified staff.

Of the women in the clerical and office services categories, many are presently upgrading their skills through on-the-job training, i.e., job rotation and job enrichment, while others have elected to obtain further education through university and community college extension programs.

Financial Services Branch

The Branch provides accounting and financial administrative support services for the Ministry. It maintains records of revenue and expenditure, prepares financial statements, and supervises and co-ordinates the accounting functions of main office and field offices. Its responsibilities include appropriation control, development of accounting and financial reporting systems, development and distribution of financial procedures, financial and cost analyses, pre-audit controls and procedures, preparation of claims under federal-provincial and sundry other agreements, and control of security deposits.

The Branch also provides financial liaison with the Management Board of Cabinet, the Ministry of Treasury, Economics and Intergovernmental Affairs, the Provincial Auditor, other ministries and agencies and the Government of Canada.

Financial Report

Statement of Revenue in 000s for year ended March 31, 1978

MINISTRY ADMINISTRATION			
Recovery of Prior Year's Expenditures			
Cheque cancellation	$ 15.5		
Accident claims	12.4		
Salaries and employee benefits	11.6		
Duplicate or overpayments, credit notes and goods returned	11.4		
Miscellaneous	2.5	$ 53.4	
Sales			
Maps, publications, etc.	$ 507.1		
Electrical power	21.2	528.3	
Rentals – Ministry Houses		457.7	$ 1,039.4
LAND MANAGEMENT			
Recovery of Prior Year's Expenditures			
Land Acquisition	$ 19.0		
Conservation Authorities	12.6		
Remote Sensing	8.5		
Miscellaneous	7.5	$ 47.6	
Taxation – Mines acreage tax		610.9	
Royalties – Forest protection charges		2,232.5	
Fees and licences – Mines		455.2	
Public Domain			
Leasing and licensing of lands	$ 1,141.0		
Gas and mining leases	802.5	1,943.5	
Sales			
Equipment	$ 869.4		
Land and buildings	231.7		
Sundry sales	14.9	1,116.0	
Reimbursements of Expenditures – Government of Canada			
Flood risk mapping and area flood damage reduction measure	$ 643.3		
ARDA –Conservation Authorities	455.2		
Dams, reservoirs and channel improvements	1.7	1,100.2	
Reimbursements of Expenditures – Others			
Recovery of Fire Fighting costs	$ 835.7		
Maintenance of (6) dams in Little Turtle River, district of Rainy River	550.0	1,385.7	8,891.6
OUTDOOR RECREATION			
Recovery of Prior Year's Expenditures			
Nanticoke Agreement	$ 12.8		
Miscellaneous	7.4	$ 20.2	
Recreation Areas			
Park entrance and camping fees	$ 4,502.0		
Park concessions	246.0		
Park miscellaneous	43.8	4,791.8	
Fish and Wildlife			
Hunting and Fishing licences	$10,795.4		
Royalties	666.8		
Confiscated articles	84.0		
Miscellaneous – Fish and Wildlife	5.8	11,552.0	
St. Lawrence Parks			
Fees	$ 1,432.3		
Sales	1,289.5		

Facilities	104.9		
Miscellaneous	21.0	$ 2,847.7	
Reimbursements of Expenditures – Government of Canada			
ARDA – Extension of Redevelopment Area Parks	$ 371.8		
Rideau and Trent Canal Waterways and Adjacent Land Use Management	49.4		
Fisheries Industrial Development Agreement	33.7	454.9	$19,666.6
RESOURCE PRODUCTS			
Renewable Resource Development			
Recovery of Prior Year's Expenditures		$ 4.8	
Forest Management			
Stumpage	$30,776.4		
Forest products	253.5		
Stock production	213.1		
Miscellaneous timber	72.4	31,315.4	
Water Management			
Royalties – Water Power		13,715.9	
Reimbursements of Expenditures – Government of Canada			
Forest Management			
ARDA – Forest Stand Improvement	$ 686.8		
ARDA – Private Land Forestry	250.0		
ARDA – Expansion of County and Authority Forest in Ontario	45.6		
Commercial Fish and Fur			
Resource Development Agreement	187.2		
Fish Nutrition Study	95.0	1,264.6	
		$46,300.7	
Non-Renewable Resource Development			
Mining tax		$22,308.5	
Royalties (Mines)		1,065.8	
Commercial fishing licence		95.1	
Fees, licences		70.7	
Miscellaneous		2.3	
		$23,542.4	69,843.1
RESOURCE EXPERIENCE			
Frost Centre facilities			292.4
TOTAL REVENUE			$99,733.1

Statement of Expenditure in 000s for year ended March 31, 1978

MINISTRY ADMINISTRATION PROGRAM		
Main Office	$ 1,565.6	
Financial Services	2,448.0	
Supply and Office Services	2,300.7	
Personnel Services	798.4	
Information Services	1,506.7	
Analysis, Research and Planning	575.7	
Legal Services	434.7	
Audit Services	452.9	
Field Offices	11,429.8	
Total, Ministry Administration		$ 21,512.5
LAND MANAGEMENT PROGRAM		
Water Control and Engineering	$10,373.2	
Forest Protection	19,752.2	
Air Service	5,068.6	
Extra Fire Fighting	6,117.5	
Resource Access	4,594.0	
Land and Water Classification	7,405.2	
Land, Water and Mineral Title Administration	19,111.8	
Conservation Authorities	29,672.3	
Total, Land Management		$102,094.8
OUTDOOR RECREATION PROGRAM		
Recreational Areas	$28,413.4	
Fish and Wildlife	19,514.4	
St. Lawrence Parks Commission	7,227.7	
Total, Outdoor Recreation		$ 55,155.5
RESOURCE PRODUCTS PROGRAM		
Mineral Management	$ 8,128.8	
Forest Management	43,189.9	
Commercial Fish and Fur	2,160.3	
Algonquin Forestry Authority, The Algonquin Forestry Authority Act	30.0	
Total, Resource Products		$ 53,509.0
RESOURCE EXPERIENCE PROGRAM		
Junior Rangers	$ 4,016.7	
Youth Corps (Experience '77)	4,940.5	
Leslie M. Frost Natural Resources Centre	978.2	
Total, Resource Experience		$ 9,935.4
TOTAL BUDGETARY EXPENDITURE		$242,207.2

Information Services Branch

Exhibits

The Ministry's principal summer exhibit was moved to the Ontario Science Centre, Toronto, after 43 years at the Canadian National Exhibition, including the seven-year break during the war. The 24-day exhibit, August 26 to September 18, 1977, told about the Ministry's forest management program and featured innovations in displays and educational material which upgraded the quality of Ministry exhibits during the year. The exhibit was viewed by an estimated 90,000 persons.

The Branch prepared and managed exhibits at five other major events: Canadian National Sportsmen's Show, Western Fair, Central Canada Exhibition, Lakehead Exhibition and International Plowing Match. Exhibits were prepared for 29 smaller fairs and shows where the Ministry presentation was usually managed by field offices with support from the Branch.

News and Features

News material from main office branches and field offices was co-ordinated to step up the flow of acceptable news reports from the Ministry to the media. News releases were delivered to appropriate news outlets and particular attention paid to releases for regional and special media. Background information was provided for editors and broadcasters.

Outdoors Offbeat, a news feature service with photographs, was distributed periodically to news outlets, selected periodicals and outdoor writers – a total of 1,300 mailings.

Ontario Outdoors, a public service radio series, was supplied regularly to 55 Ontario stations. Each program featured Ministry services for 27 minutes.

Staff support and guest personnel were provided for TV and radio programs in Metropolitan Toronto and northern Ontario.

Material was mailed to 48,000 persons who asked for information on natural resources or outdoor recreation.

Publications

The publishing list grew considerably during the year as the Ministry released 47 books or large booklets, 24 smaller booklets, seven folders and 25 small folders or leaflets. These totals do not include scientific papers and technical reports and numerous leaflets on provincial parks and other installations and services.

The annual summary of fishing regulations and the annual information booklet for Junior Rangers were issued in French versions for the first time. Some provincial park publications were also produced in French.

New publications of main office branches and field offices included the following:

Background Information, Algonquin Park District
Background Information, Bancroft District
Background Information, Bracebridge District
Background Information, Minden District
Background Information, Parry Sound District
Background Information, Pembroke District
Background Information on the Development of a Co-ordinated Program Strategy, Southern Ontario
Boating Restrictions, Ontario, 1977
Carillon Provincial Park Master Plan, 1977 ($2.00)
Carillon Parc Provincial plan directeur, 1977 ($2.00)
Charleston Lake Provincial Park Master Plan, 1978 ($2.00)
Coping with the Great Lakes (co-op with Fisheries and Environment Canada)
Counts and Measurements of Ontario Lakes
A Discussion Paper on Flood Plain Management Alternatives
Flood Plain Criteria and Management Evaluation Study ($4.00)
The Forest Industry in the Economy of Ontario ($1.00)
A Guide for the Use of Canada/Ontario Great Lakes Flood and Erosion Prone Area Mapping ($1.50) (Maps, $2.75)
Kakabeka Falls Provincial Park Master Plan, 1978 ($2.00)
Killarney Provincial Park ($1.00)
Killbear Provincial Park Master Plan, 1977 ($2.00)
Mineral Aggregates in Ontario
Neys Provincial Park Master Plan, 1977 ($2.00)
Ontario's Conservation Authorities
Peters Woods Provincial Nature Reserve Master Plan, 1977 ($1.00)
Petroglyphs Provincial Park Master Plan, 1977 ($2.00)
A Pictorial History of Algonquin Provincial Park ($0.50)
Pinery Provincial Park Revised Master Plan Draft, 1977 ($0.50)
Point Farms Provincial Park Master Plan, 1977 ($2.00)
Polar Bear Provincial Park Background Information, 1977 ($2.00)
Polar Bear Provincial Park Planning Proposal, 1977 ($1.00)
Quetico Provincial Park ($2.00)
Quetico Provincial Park Master Plan, 1977 ($2.00)
Sandbanks Provincial Park Preliminary Master Plan, 1977 ($0.50)
Short Hills Provincial Park Master Plan, 1977 ($2.00)
Statistical Report on the Mineral Industry of Ontario, 1971-73 ($5.00)
Toronto Angler's Guide ($0.50) (co-op with Metropolitan Toronto and Region Conservation Authority)
Towards a Nickel Policy for the Province of Ontario ($25.00)
Vegetation Management for Wildlife in Ontario ($2.50)
Water Level Regulations in Muskoka
What to Do Outdoors in Central Region

A-V and Films

During the year a color motion picture on aerial forest fire fighting was produced for Forest Fire Control Branch. The 11-minute 16 mm film was screened on a network of northern Ontario TV stations.

Three motion picture news releases, filmed by staff, were widely used on Ontario TV stations.

An animated public service message on forest fire prevention was completed and shown on Ontario TV stations. A 35 mm film of the same message was distributed to a group of northern Ontario theatres.

Four public-service messages on preservation of wildlife habitat and game law enforcement were completed and distributed to Ontario TV stations.

A small screening room was completed to show films and audio-visual programs. Sixty Ministry groups booked the room in its first three months of use.

Staff photographers completed 187 photography assignments for Ministry programs. About 8,000 prints were produced in the darkroom.

The video tape library recorded and filed 30 video tape cassettes for Ministry personnel.

The motion picture library loaned 1,500 films to Ministry offices and educational groups.

Libraries

The Resources Library provides a variety of library services for staff in all Ministry offices and for outside persons seeking data on natural resources and other matters.

The Mines Library provides specialized services in its field for staff, students and people in the mining industry.

The Research Library, located in the Maple complex, provides technical and scientific material in disciplines related to Ministry activities.

Internal Audit Services Branch

The principal objective of the Branch is to provide independent evaluations and objective reports to management concerning accountability for activities at all working levels. During the year, the Branch produced approximately 100 such reports in addition to other activities.

The Branch is divided into four sections under managers located as follows: Northwestern Region office, Northeastern Region office, Maple District office and main office.

Legal Services Branch

During the fiscal year ending March 31, 1978, the Branch prepared and processed 48 regulations made under the authority of Acts administered by the Ministry and 447 Orders-in-Council. A total of 231 agreements was processed through the Branch. The total included three Federal-Provincial agreements, two relating to the development of fishery resources and one to the establishment of a new national park in the Thunder Bay District.

Policy and Priorities Office

The Policy and Priorities Office was established formally as of April 1, 1978, with the Assistant Deputy Minister, Policy and Priorities, supported by the Policy Co-ordination Secretariat and the Program Analysis Office. The new Office is responsible for the following:

The corporate development of co-ordinated policies to ensure integrated resource planning and management; and

The establishment of integrated but flexible Ministry and program priorities.

Policy Co-ordination Secretariat

The Policy Co-ordination Secretariat:

– Provides co-ordination, integration and communication services with regard to policy planning to the main office groups and to the regions to assist them in achieving the Ministry's objectives;

– Provides staff support to the Policy and Priorities Committee, the Minister's Policy Committee and other senior-level committees as required;

– Supports the production of new policy initiatives in conjunction with the relevant main office and regional staff;

– Provides support, advice and information to the main office groups and regions in assessing long-range policy needs and directions in the context of the Ministry's mandate and government objectives;

– Ensures the widest and earliest possible multi-functional consideration of policy proposals being developed within the Ministry;

– Ensures the necessary liaison with Cabinet and its committees, and with other Ministries; and

– Undertakes special policy co-ordination assignments at the request of the Assistant Deputy Minister, Policy and Priorities.

Program Analysis Office

The Program Analysis Office:

– Conducts and co-ordinates cost-effectiveness studies relating to Ministry programs and proposals (these studies aid in setting priorities for programs and assist main office groups and regions in achieving Ministry objectives);

– Co-ordinates the program planning and priority setting process in the Ministry and liaison with central agencies on Ministry estimates (this includes participation in the development of the Ministry's Management by Results commitments);

– Co-ordinates liaison with Management Board of Cabinet and its Secretariat on matters dealt with by the Board;

– Ensures necessary liaison with other Ministries for programs such as Regional Priority where the Ministry of Natural Resources carries out programs on behalf of other Ministries; and

– Provides support to the Policy and Priorities Committee in the analysis and development of the program aspects of policy issues and assists in the development of methods of assessing relative priorities among programs by the Committee.

Management Improvement Office

A Management Improvement Plan to bring about major changes in the Ministry organization and operation was announced on November 24, 1977.

The Management Improvement Office was established on December 1, 1977, with the following objective: "To direct, co-ordinate and monitor the implementation of the Management Improvement Plan and for the continuing improvement of management organization, systems and practices through 1980."

The new Office is headed by a director who reports to the Deputy Minister.

Twenty-five tasks were initially identified as specifics for the management improvement function. The tasks included human resources (manpower) planning, program management evaluation, policy and priorities system, information services, and private sector use. Other tasks were to be identified as the need became apparent.

Task forces were set up to deal with certain projects, and project co-ordinators were assigned to the Management Improvement Office.

Many of the major organizational changes were effected within the fiscal year. For example, the newly established Aviation and Fire Management Centre was moved from Toronto to Sault Ste. Marie, and the office of the Regional Director in Northeastern Region was moved from Sault Ste. Marie to Sudbury.

Program Management Evaluation

Program Management Evaluation was established on February 1, 1978, with the following two purposes: to develop a reliable and comprehensive management information system; and to develop mechanisms to improve management performance. The new office is headed by an executive co-ordinator who reports to the Deputy Minister.

The Mining and Lands Commissioner

The Commissioner exercises judicial, quasi-judical and administrative powers under The Beach Protection Act, The Mining Act and The Mining Tax Act, 1972, and regulations made under The Ministry of Natural Resources Act, 1972, assigning powers and duties of the Minister to the Commissioner.

Judgments, orders and reports issued by the tribunal during the fiscal year were as follows:

847 orders extending time for performing work or applying and paying for leases;

53 orders authorizing special renewal of licences;

75 miscellaneous judgments, orders and reports.

The total number of orders was 975.

Hearings under The Mining Act were held in Kirkland Lake, Red Lake, Sault Ste. Marie, Sudbury, Thunder Bay, Timmins and Toronto.

Appeals under The Conservation Authorities Act were heard in Ingersoll, Kitchener, London, Ottawa and Toronto.

Inquiries under The Lakes and Rivers Improvement Act were held in Cobourg, Cornwall, Kingston and Toronto.

Statutory Authority	Settled or Abandoned	Hearings Held
The Conservation Authorities Act	4	11
The Lakes and Rivers Improvement Act	–	6
The Mining Act	2	16
The Mining Tax Act, 1972	–	–
TOTAL	6	33

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Government
Publications

Ontario

Minister of Natural Resources

Annual Report

1979

Annual Report

of the Minister of Natural Resources
of the Province of Ontario
for the fiscal year ending March 31, 1979
$1.00

TO HER HONOUR
The Lieutenant-Governor
of the Province of Ontario

MAY IT PLEASE YOUR HONOUR
The undersigned begs respectfully to present to your Honour the Annual Report of the Ministry of Natural Resources for the fiscal year beginning April 1, 1978, and ending March 31, 1979.

James A. C. Auld

JAMES A. C. AULD
Minister

Ontario

Ministry of
Natural
Resources

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**Related information of interest is reported in Statistics, 1979.*

Highlights

- The total value of mineral production in Ontario in 1978 was $2.6 billion.
- The Pits and Quarries Control Act applies in 278 designated townships; about 1,600 licences to operate pits and quarries have been issued.
- "Towards a Nickel Policy for the Province of Ontario" was published as Mineral Policy Background Paper No. 4.
- "Investment Effects on the Mineral Industry of Tax and Environmental Policy Changes: A Simulation Model" was published as Mineral Policy Background Paper No. 5.
- Two programs were begun to stimulate mineral exploration — the six-year Northern Ontario Geological Survey and the five-year Kirkland Lake Initiatives Program.
- Payments under the Mineral Exploration Assistance Program were $435,467, bringing the total government expenditure since 1971 to $2,983,322.
- Grants of more than $400,000 were awarded to 10 universities under the Ontario Geoscience Research Grant Program.
- The Ontario Geological Survey sent out 53 field parties in 1978 to map and record geological formations.
- A total of 1.637 million m^3 (5.78 million cunits) of wood was harvested on Crown lands; their value at time of measurement was $35.9 million.
- On Crown lands 239,729 ha (592,390 acres) received silvicultural treatment.
- Ontario's forests were planted with 58 million trees raised in Ministry nurseries.
- Agreements with private landowners under The Woodlands Improvement Act increased by 746 to 6,935, bringing 127,413 ha (314,843 acres) under agreement.
- Under the Forestry Act, forests managed by agreements with municipalities, Conservation Authorities and the Government of Canada increased by 658 ha (1,626 acres) to 108,500 ha (268,109 acres).
- In the continuous inventory of Ontario's forests, 168,300 km^2 (65,000 square miles) were covered by aerial photography.
- Visitors to provincial parks numbered 9,348,000 in 1978; the number of campers was 1,430,751.
- The number of provincial parks increased by two to 128 with the opening of two natural environment parks — Fathom Five, near Tobermory, and Awenda, near Penetanguishene.
- The Ministry managed 24,000 km (15,000 miles) of canoe routes in provincial parks and on other Crown lands.
- About 1,400 water access points were maintained on public land for boaters.
- Under the winter trails recreation program, $500,000 was made available in grants to private clubs and Conservation Authorities for the grooming and maintenance of 12,900 km (8,000 miles) of snowmobile and ski trails.
- The Ministry has developed a new trap, a foot-snare, which has been used to live-trap coyotes, foxes and raccoons with relatively little injury to the animals.
- A total of 587,643 hunting licences was sold to Ontario residents and 31,767 to non-residents in 1978.
- Hunters donated 11,000 deer and moose hides to native craftsmen.
- A total of 38,500 new hunters was trained in 1978, bringing to 490,798 the number trained since 1957.
- The wild fur pelts taken by 14,725 trappers were valued at $11.3 million.
- The commercial fish harvest in 1978 was 22.1 million kg (49.1 million pounds) valued at $15.4 million. Lake Erie accounted for 70 per cent of the catch and 60 per cent of its value.
- Ontario waters were stocked with 6.1 million fish raised in Ministry hatcheries.
- In a continuing inventory, 549 lakes and 480 km (300 miles) of streams were surveyed.
- Grants to Conservation Authorities under The Conservation Authorities Act amounted to $33,330,808.
- Crown cottage lots, offered by lease in recent years, were made available for purchase by eligible applicants.
- A total of 2075 ha (5,128 acres) of private land was acquired for government purposes, bringing the acquisition since 1962 to 255,003 ha (630,128 acres).
- The Ministry maintained 8345 km (5,182 miles) of resource access roads.
- The Ontario Basic Mapping Program was officially implemented, and a Basic Mapping Section was established.
- The second precise calibration base line in Ontario was installed in Scarborough (the first is in Mississauga).
- Aerial thermographic coverage of Peterborough was completed and the thermographs of individual houses were presented to owners.
- Sixty-six regulations and 483 Orders-in-Council were prepared and processed.

Goal

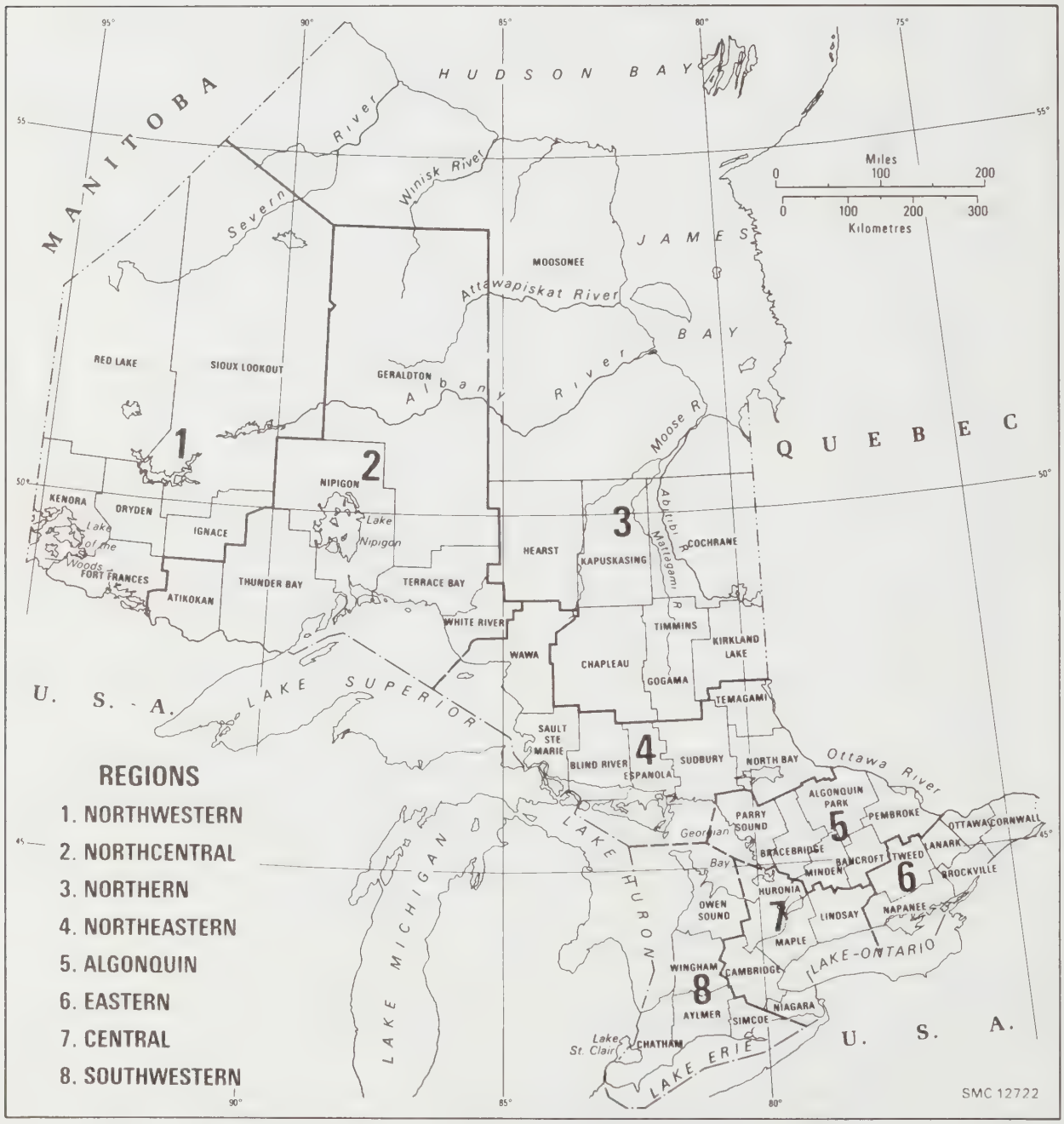
The goal of the Ministry of Natural Resources is defined as follows:

"To provide from Crown lands and waters, and to encourage on private lands and waters, a continuing combination of resource development, outdoor recreation and quality environment most consistent with the social and economic well-being of the people of Ontario."

Ministry Operational Organization

The Ministry of Natural Resources is organized functionally and geographically so that the authority for operational decision-making is placed as close as possible to the program delivery level.

While the field organization of the Ministry directly provides services to the public, Main Office is responsible for monitoring, co-ordination, policy development, operational review and the comptrollership function.



Field Organization

The Ministry of Natural Resources is organized functionally and geographically so that the authority for operational decision-making is placed as close as possible to the program delivery level. For administrative purposes, Ontario is divided into eight regions and 49 districts. The district managers, regional directors and field assistant deputy ministers are the line managers responsible for implementing the Land Management, Outdoor Recreation and Resources Products Programs of the Ministry.

Each regional office is organized into functional units headed by specialists responsible for providing advice and support to the districts. In some instances — such as conservation authorities, mineral management, engineering and administrative services — the regional office is also the delivery point for Ministry programs.

The primary role of the regional director and his staff is to direct and co-ordinate the work of the districts by establishing regional priorities and allocating appropriate resources to meet these; by establishing program standards and subsequently auditing to ensure the standards are met; by developing training programs and ensuring they are implemented; and by providing specialized advice and support services. In addition, the Regional Director and his staff recommend to main office annual work plans and identify areas where policy is required or needs to be modified.

Districts are the basic line units of the Ministry organization where the management and use of natural resources takes place with consideration of local requirements. District managers are responsible for the preparation of local land use plans and for the integration of individual resource plans that are consistent with the land use plan. Each district manager is responsible to the appropriate regional director for all activities assigned to the district.

The four northern regional directors and the Aviation and Fire Management Centre director report to a field assistant deputy minister at Thunder Bay; the four southern to one located at Toronto. The two field assistant deputy ministers are assigned line responsibility, authority and accountability for program management. In addition, they reflect field positions through membership on the Policy and Priority Committee.

Policy and Priorities Office

The Policy and Priorities Office is responsible for the following:

The corporate development of co-ordinated policies to ensure integrated resource planning and management; and

The establishment of integrated but flexible Ministry and program priorities.

Policy Co-ordination Secretariat

The Policy Co-ordination Secretariat:

— Provides co-ordination, integration and communication services with regard to policy planning to the main office groups and to the regions to assist them in achieving the Ministry's objectives;

— Provides staff support to the Policy and Priorities Committee, the Minister's Policy Committee and other senior-level committees as required;

— Supports the production of new policy initiatives in conjunction with the relevant main office and regional staff;

— Provides support, advice and information to the main office groups and regions in assessing long-range policy needs and directions in the context of the Ministry's mandate and government objectives;

— Ensures the widest and earliest possible multi-functional consideration of policy proposals being developed within the Ministry;

— Co-ordinates the process for development of new legislation;

— Ensures the necessary liaison with Cabinet and its committees, and with other Ministries; and

— Undertakes special policy co-ordination assignments at the request of the Chairman of Policy and Priorities Committee.

Program Analysis Office

The Program Analysis Office:

— Conducts and co-ordinates cost-effectiveness studies relating to Ministry programs and proposals (these studies aid in setting priorities for programs and assist main office groups and regions in achieving Ministry objectives);

— Co-ordinates the program planning and priority setting process in the Ministry and liaison with central agencies on Ministry estimates (this includes participation in the development of the Ministry's Management by Results commitments);

— Co-ordinates liaison with Management Board of Cabinet and its Secretariat on matters dealt with by the Board;

— Ensures necessary liaison with other Ministries for programs such as Regional Priority where the Ministry of Natural Resources carries out programs on behalf of other Ministries; and

— Provides support to the Policy and Priorities Committee and the Minister's Policy Committee in the analysis and development of the program aspects of policy issues, and assists in the development of methods of assessing relative priorities among programs by the Committee.

Program Management Evaluation

Program Management Evaluation is a short-term staff function, established in April, 1978, to assist the Deputy Minister to improve Ministry performance by carrying out specific tasks as follows:

To provide over-all guidance in the development of a Ministry management system;

To ensure the development of a reliable, comprehensive information system to serve the needs of managers at all levels;

To ensure improvement of the Ministry's output measures and its formal Management-by-Results (MBR) system; and

To foster an improvement in general managerial skills and approaches, to effect a more business-like operation with increased emphasis on effectiveness and efficiency.

During the fiscal year, activities were mainly concentrated on the elements of the management system, MBR and operational audits.

A system of formalized operational audits was launched throughout the Ministry through the development of procedures and the conducting of two major workshops for audit co-ordinators. By year-end, field and program staff had completed approximately 60 audits under this system.

MBR mid-year and year-end reports were prepared for the Deputy Minister and Management Board, and assistance was extended in integrating the MBR system with the Work Planning System.

Management Improvement Office

Organization

The organizational design for the Ministry was established and the changes required were to be accomplished in two stages.

In Stage I, the reorganizational changes were carried out in three steps and resulted in a reduction of ten senior staff positions.

In Stage II each Group, where viable, will be restructured on a Planning, Management and Service basis rather than the present activity basis.

Utilization of Human Resources

A report was submitted by a committee making recommendations on the utilization of human resources. A co-ordinator has been appointed to implement the approved recommendations.

Resource Planning System

A committee was appointed to clarify the role of the Ministry's Natural Resources Planning System within the over-all Planning and Management System. The committee produced a report clarifying the system. The report defines the parts of the system and outlines their relationship to other parts of the corporate planning system, e.g. annual work plan, policies and priorities, performance evaluation, etc. It also sets out terminology, planning responsibilities and approval process at all levels.

Target dates were set for completion of the plans at various levels. District staff were identified to develop local Land Use Plans which will provide the framework for the local resource plans such as Forest Management plans.

Management Improvement Projects

Main Office Staff Reduction

On November 24, 1977, the Deputy Minister proposed to reduce main office staffing by 20 per cent (about 200 positions). As of March 31, 1979, the net reduction of main office staff was 88 of which 22 were decentralized to field offices.

Accounts Payable Procedures

A committee examined the accounts payable procedure in field offices in an effort to reduce the time required to process invoices. All but one of the committee's 18 recommendations are being implemented.

Consolidation of Main Office Administrative Units

A committee studied the feasibility of consolidating branch and group administrative units with the existing service branches, e.g. Personnel, Administrative and Financial. The recommendations made are being reviewed.

Information Services

A one-man task force was assigned the task of examining the Ministry's public communications program in an effort to determine how to better inform the public about Ministry activities as well as examine other programs under the Information Services Branch.

As a result of the recommendations made, the reporting relationship of the three Ministry libraries was changed so that the Mines library becomes the responsibility of the Mineral Resources Group and the Resources library (Whitney Block) and the Research library (Maple) becomes the responsibility of the Outdoor Recreation Group.

A committee was appointed to develop a communications plan for the Ministry. Other recommendations made are still under consideration.

Research Study

A study group was assigned the task of examining the relevancy, funding and results of the research and development program in the Ministry. The recommendations made in the group's report are under active consideration.

Private Sector Review

A report has been received from a committee which was assigned the task of identifying processes and other factors inhibiting the use of the private sector. The recommendations made are under review.

Delegation of Authority

A study was undertaken to determine what areas of authority should or could be delegated to field offices. The first phase of the report has been received, and the recommendations made are in the process of being implemented.

Managers' Training Seminar

As a result of the many recommendations implemented, there have been considerable changes in systems and organization. This has created a need to inform and update managers. As a result a Managers Training Seminar has been developed and is scheduled for implementation in the fall of 1979.

Forest Resources Branch

The objective of the Branch is to produce optimum and continuous industrial, social and environmental benefits from the public forests and to encourage and assess similar production on private lands in Ontario.

Ontario Forest Research Centre

The Ontario Forest Research Centre, with headquarters at Maple and four field research units, continued to provide scientific and technical knowledge and information needed for effective management of forest resources in Ontario.

Research activities are focused on biological aspects of growing the new forest for a variety of uses. Studies are not only carried out by the scientists of the Centre, but contracts are also let to universitites, industries and individuals, and co-operative programs are under way with the Canadian Forestry Service and other institutes. The kinds of research projects range from rather basic scientific investigations to technological developments, but all are oriented towards improvement of knowledge in the service of resource management.

Important team work has been under way for some time to improve the genetic characteristics of plant materials to increase growth and resistance to diseases and pests. The breeding research has resulted in new hybrids in poplar and spruce. Methods in organic chemistry are being tried to identify compounds which might indicate the potential growth characteristics of new hybrids at an early stage of plant development.

Other related studies deal with the rooting of cuttings, tree nutrition, the production of biomass, the use of hybrid poplar leaves as a source of protein, and the possible losses of nutrients in intensive forest management and harvesting systems. Close co-operation is maintained with field personnel not only for the establishment of field tests, but also to make the genetically improved plant material available for mass propagation and operational plantations.

The valuable but relatively small amounts of genetically improved plant material require new, more efficient techniques and systems of plant propagation and distribution to field locations for artificial regeneration of the forests. Studies deal with seed production, an automated system for using pregerminated seed in a greenhouse transplant system, corrugated plastic shelters for seed germination and plant development, nursery techniques and handling of nursery stock.

The indigenous hardwood forest is an important component of the landscape and contributor to the life style in the southern half of the province. Many of the species provide valuable products under the right growing conditions. Studies therefore deal with the following: the natural regeneration of yellow birch and maple and the development of these stands particularly for the production of quality hardwoods; improvement of maple sap production by soil fertilization; methods of site preparation and establishment of hybrid poplar, oak, walnut, black locust, ash, black alder and other species on abandoned farm uplands; and rehabilitation of lowland sites with high-quality fast-growing silver maple, Jackii poplar, red ash and European alder selections.

Similarly, the natural spruce-fir-aspen forest of northern Ontario poses many challenges to improve forest conditions. Studies deal with drainage and fertilization of a black spruce swamp, the interaction of soil moisture nutrients and density of black spruce plantations, productivity and nutrient cycling in spruce forest ecosystems, the release of balsam fir by herbicide spraying and thinning, root decay in balsam fir, and the quality and variability of natural aspen regeneration.

An important new development is a program of correlation between the Ontario physiographic site classification developed by Ontario Forest Research Centre during the past 35 years and the Canadian system of soil classification. This was greatly facilitated by the establishment by Agriculture Canada of a forest soils position within the Ontario Institute of Pedology at Guelph.

Long-term studies on growth and yield of red pine plantations have resulted in preliminary tables. Similar studies on hardwoods in southern Ontario have been expanded and attempts made to relate growth to stand and soil parameters. A first-stage Ontario Wood Supply and Forest Productivity (OWOSFOP) model was developed in collaboration with Timber Sales Branch.

More detailed information on staffing, organization, programs and publications is available in Forest Research 78, an annual overview of activities of the Ontario Forest Research Centre.

Silviculture

Tree Seed Program

The inventory of forest tree seed in storage at the Ontario Tree Seed Plant, Angus, as of June 1, 1978, was 5,551,000,000 viable seeds of 92 species, weighing 26,700 kg (59,900 pounds) and valued at approximately $1,000,000.

The year 1978 was a good crop year for many of the species used in the reforestation program.

1978 Seed Crop by Species	Hectolitres Collected
White Pine	116
Red Pine	576
Jack Pine	20,375
White Cedar	198
White Ash	130
Silver Maple	103
Basswood	161
Black Locust	75
Black Walnut	1,723
Other Species	278
Total	23,735
	(65,271 bushels)

Seed Distribution

A total of 2,201,450,000 viable seeds was used to carry out 193 regeneration projects in the Province during 1978, an increase of 563,207,000 viable seeds or 34 per cent over the 1977 program. This seed was used in four main programs

Nursery stock production (bare root)	430,437,000
Container stock	17,596,000
Direct Seeding	1,736,895,000
Research and Miscellaneous	16,522,000
Total Viable Seed	2,201,450,000

Plant Stock Distribution

Bare Root Nursery Stock	
conifers	49,170,856
hardwoods	3,757,269
Total	52,928,125
Container Stock	5,487,210
Grand Total	58,415,335
Production Targets seeded	71,197,000

Classification of Cutover Forest Land, 1978-9

Areas in Hectares (Acres)

Cutting Method	Available For Regeneration Treatment			Natural Regeneration Without Treatment			Not Available For Regeneration Treatment			Total		
	Crown	Patent	Total	Crown	Patent	Total	Crown	Patent	Total	Crown	Patent	Total
Clear Cut	69,706 (172,247)	5,812 (14,363)	75,518 (186,610)	32,342 (79,918)	3,558 (8,793)	35,900 (88,711)	27,908 (68,961)	2,055 (5,079)	29,963 (74,040)	129,956 (321,126)	11,425 (28,235)	141,381 (349,361)
Selection Cut	— —	— —	— —	10,772 (26,619)	10,394 (25,683)	21,166 (52,302)	— —	— —	— —	10,772 (26,619)	10,394 (25,683)	21,166 (52,302)
Partial Cut	— —	— —	— —	— —	— —	— —	24,931 (61,605)	7,520 (18,582)	32,451 (80,187)	24,931 (61,605)	7,520 (18,582)	32,451 (80,187)
Total	69,706 (172,247)	5,812 (14,363)	75,518 (186,610)	43,114 (106,537)	13,952 (34,476)	57,066 (141,013)	52,839 (130,566)	9,575 (23,661)	62,414 (154,227)	165,659 (409,350)	29,339 (72,500)	194,998 (481,850)

Summary of Silvicultural Operations, 1978-9

Areas in Hectares (Acres)

	Crown Land	Agreement Forests	W.I.A.	Sub-Total	Other Patent Lands	Total
REGENERATION						
Planting Nursery Stock	18,529 (45,785)	359 (887)	4,100 (10,132)	22,988 (56,804)	2,201 (5,438)	25,189 (62,242)
Planting Container Stock	2,280 (5,633)	52 (129)	28 (69)	2,360 (5,831)	— —	2,360 (5,831)
Seeding	23,548 (58,189)	6 (15)	— —	23,554 (58,204)	28 (70)	23,582 (58,274)
Scarification	4,013 (9,917)	4 (10)	— —	4,017 (9,927)	— —	4,017 (9,927)
Strip Cutting	2,580 (6,376)	— —	— —	2,580 (6,376)	— —	2,580 (6,376)
Seed Tree Cutting	6,325 (15,630)	4 (11)	— —	6,329 (15,641)	— —	6,329 (15,641)
Shelterwood Cutting	10,669 (26,364)	158 (390)	157 (388)	10,984 (27,142)	87 (215)	11,071 (27,357)
Clear Cutting	2,771 (6,847)	145 (359)	— —	2,916 (7,206)	121 (300)	3,037 (7,506)
Total	70,715 (174,741)	728 (1,801)	4,285 (10,589)	75,728 (187,131)	2,437 (6,023)	78,165 (193,154)
RE-TREATMENT for REGENERATION	3,435 (8,487)	91 (224)	820 (2,027)	4,346 (10,738)	— —	4,346 (10,738)
TENDING						
Hand Cleaning	4,855 (11,998)	660 (1,630)	357 (881)	5,872 (14,509)	— —	5,872 (14,509)
Herbicide Spraying	16,955 (41,896)	459 (1,135)	1,249 (3,087)	18,663 (46,118)	2,050 (5,065)	20,713 (51,183)
Thinning Improvement Cuts	12,853 (31,761)	1,936 (4,785)	4,160 (10,280)	18,949 (46,826)	475 (1,174)	19,424 (48,000)
Pruning	661 (1,633)	459 (1,133)	443 (1,096)	1,563 (3,862)	— —	1,563 (3,862)
Fertilization Drainage	188 (464)	484 (1,197)	25 (63)	697 (1,724)	— —	697 (1,724)
Total	35,512 (87,752)	3,998 (9,880)	6,234 (15,407)	45,744 (113,039)	2,525 (6,239)	48,269 (119,278)
SITE PREPARATION	42,834 (105,846)	578 (1,428)	1,274 (3,147)	44,686 (110,421)	4 (10)	44,690 (110,431)
MARKING	50,243 (124,153)	3,162 (7,814)	5,710 (14,111)	59,115 (146,078)	5,144 (12,711	64,259 (158,789)
TOTAL AREA TREATED	202,739 (500,979)	8,557 (21,147)	18,323 (45,281)	229,619 (567,407)	10,110 (24,983)	239,729 (592,390)

Tree Improvement

All seed orchards and seed production areas are currently being evaluated for their ability to produce the quantities of genetically superior seed required to fill the needs set out in the Forest Production Policy. Some areas will be deleted, others expanded. It is anticipated that over the next five years the seed production areas will increase substantially; the clonal seed orchards will expand, especially in white pine and white spruce; and seedling seed orchards will be established for species such as black spruce and jack pine. Due to the minimal genetic variation in red pine, no work is currently under way for this species.

	Black spruce	White spruce	White pine	Jack pine	Red pine	Other Species	TOTAL
Seed collection area in hectares (acres)				approx. 6,500 (16,000)			
Seed production area in hectares (acres)	51 (125)	124 (305)	12 (30)	10 (25)	73 (180)	22.5 (55)	292.5 (720)
Seed orchard area in hectares (acres)	14 (35)	18 (45)	12 (30)	— —	— —	3 (7)	47 (117)
No. of plus trees selected	157	180	52	—	—	—	389
No. of scions grafted	4,930	3,995	1,516	—	—	—	10,441
No. of grafted stock outplanted	3,309	3,010	1,473	—	—	—	7,792

Advisory Services

Private Lands

The Woodlands Improvement Act	Agreements	Areas in Hectares (Acres)
New Agreements Activated 1978-79	746	15,548 (38,419)
Agreements in Effect March 31, 1979	6,935	127,413 (314,843)
Number of Trees Planted	7,736,775	

These operations are carried out on private land under The Woodlands Improvement Act agreements. The acreage treated is an integral part of forest production targets, particularly in southern Ontario where there is no significant area of Crown land.

Agreement Forests

Areas in Hectares (Acres)

Agreement Holders	Added 1978-9	Released 1978-9	Total
1 Government of Canada			1,429 (3,532)
23 Conservation Authorities	129 (318)		38,275 (94,580)
19 Counties	173 (428)		58,899 (145,543)
10 Townships			1,226 (3,029)
6 Regional Municipalities	356 (880)		8,671 (21,425)
59 Totals	658 (1,626)		108,500 (268,109)

The agencies reported above have forest management agreements with the Minister under The Forestry Act. The agencies' forests are an integral part of forest production targets, of particular importance in districts with no significant Crown land areas.

Pest Control

The spruce budworm continued as the most serious forest pest problem in 1978 with the outbreak expanding to a gross area of about 15 million ha (37 million acres). The majority of the infestation is in the Northern Region, but portions of the Northwestern, North Central and Northeastern Regions are also seriously infested. The Ministry conducted a small spraying program to protect high value forests in Kirkland Lake, Wawa and Hearst Districts. A total of 750 ha (1,880 acres) was sprayed aerially, using two chemical insecticides (Matacil and Orthene) and two bacterial insecticides (Thuricide and Novobac).

The recent outbreak of forest tent caterpillar persisted in 1978. Several provincial parks (Grundy, Six Mile and Mikisew), the Frost Centre, and WIA and Agreement forests in the Owen Sound District were sprayed aerially, using Thuricide to preserve the value of public recreation areas and reduce the incidence of maple decline. The spraying programs covered a total of 1,150 ha (2,890 acres).

Maple decline appeared as a serious problem in Owen Sound and Parry Sound Districts with the discovery of small stands of dead and dying maple over a gross area of 17,000 ha (43,000 acres). The cause of this decline is unclear at present, but defoliation of the trees by forest tent caterpillar appears to be a primary causal factor.

An additional 750 ha (1,870 acres) were sprayed aerially with Orthene to prevent serious defoliation by the oak leaf shredder. Spraying was confined to two county forests and one provincial tree nursery in Huronia District.

A number of other minor pest problems, i.e., white pine weevil, pine and spruce sawflies, Fomes root disease and rodents required small-scale control programs throughout southern Ontario. In total, 4,038 ha (10,095 acres) were treated for insect, disease and rodent problems in 1978.

Timber Sales Branch

The major responsibilities of Timber Sales Branch are the rational management of Ontario's Crown land forests and the orderly disposition of the Province's Crown timber resource.

Authority under the statute and the regulations of The Crown Timber Act allows the Branch to effect these responsibilities. They are accomplished through the continuous inventory of the forest resource, the review and approval of all Crown, company, and Agreement forest management plans, the allocation of the Province's Crown timber resource to the forest industry by various statutory methods, the licensing of all forest industry or timber-using mills, the measurement or scaling of the harvested volume of Crown timber, and the continual monitoring of various factors affecting the performance of Ontario's forest industry.

Forest Resources Inventory

The Forest Resources Inventory Section supervised the tendering, quality checking, and indexing of 168,300 km² (65,000 square miles) of aerial photography of the Province. Some 72,500 km² (28,000 square miles) of this photography occurred in northern Ontario, specifically in the northern half of the Ministry's Cochrane administrative district and extending along the Moose River to James Bay through the Moosonee administrative district. Another northern Ontario area which was photographed was centered on the Kirkland Lake administrative district. All of this photography was carried out at the conventional scale of 1:15,840.

Another 95,800 km² (37,000 square miles) of aerial photography was completed through an accelerated program for southern Ontario. Three Ministry administrative regions, Eastern, Central and Southwestern were photographed during 1978 at the new metric scale of 1:10,000, completing the second cycle of the Province's aerial photography.

In addition to the aerial photography, sampling surveys of forest stands were conducted by field parties on almost 9,600 km² (3,700 square miles) in the Ministry's Algonquin Region which included all of Algonquin Park. Aerial photograph interpretation, along with the identification of forest stand types in this region, were completed and checked.

Further, more than 31,000 km² (12,000 square miles) were covered by checking of interpretation work performed by contract outside the Ministry. These areas were under Crown timber licence to Ontario-Minnesota Pulp and Paper Co. Ltd., Domtar Inc., Great Lakes Paper Co. Ltd, Kimberly-Clark of Canada Ltd., and Reed Ltd.

Checking and project monitoring were also carried out on the forest resources inventory interpretive work of private sector consultants on the Crown land area under the Memorandum of Understanding between the Ministry and Reed Ltd. in northwestern Ontario.

The forest stand inventory data are compiled for computer tabulation. More than 38,850 km² (15,000 square miles) of new forest inventory data were stored and report ledgers were produced. As well, the inventories of several Crown forest management units in Northwestern Region and Manitoulin Island were updated.

The photographic darkrooms associated with the aerial photograph work continued to serve the Ministry's main office and field offices alike, as well as the public in general.

Management Plans

Forest management plans provide the broad framework within which forest operations are conducted. More detailed operating plans for shorter time periods identify the Crown timber stands to be harvested, regenerated and tended, and the roads and other improvements required in Crown, Company, and Agreement Forest management units. During the 1978-9 fiscal year, 206,500 ha (510,300 acres) of operational cruise data were processed by computer as supplied by the Ministry's forestry field staff.

Status of Management Plans, March 31, 1979

Areas in Square Kilometers (Square Miles)	Forest Management Units					
	Crown		Company		Agreement	
	No.	Area	No.	Area	No.	Area
Approved Standard Plans	65	186,733 (72,098)	2	35,136 (13,566)	37	759 (293)
Plans Submitted For Approval	—	—	3	22,528 (8,698)	2	122 (47)
Plans Being Prepared and/or Revised	14	67,461 (26,047)	8	76,977 (29,721)	20	197 (76)
New Inventory Required	3	29,427 (11,362)	4	64,708 (24,984)	—	—
Inactive and/or Inaccessible. Not Under Plans	6	50,199 (19,382)				
Total	88	333,820 (128,889)	17	199,349 (76,969)	59	1,078 (416)

Timber Allocation

The Crown timber resource is allocated to the Province's forest industry in accordance with forest management principles and industrial requirements. Crown timber harvesting licences provide the Province's forest industry with the legislative authority to harvest Crown timber on an annual, allowable-harvest basis. The licences take several forms and are specific as to geographic area, tree species, volumes, stumpage payments and other charges, and various harvest control measures.

As of March 31, 1979, there were 478 active timber licences in the Province covering an area of 239,667 km² (92,536 square miles). During the course of the fiscal year, 170 new or renewed Order-in-Council timber licences were drafted, processed and issued, and an additional 16 tendered bid sales were conducted in conjunction with the respective field office.

Wood Measurement

Measurement, or scaling, determines the volume of timber harvested from Crown lands and Agreement Forests. It is the basis for the determination of public revenue and forest production statistics related to the forest industry.

Only licensed scalers, approved by the Ministry, may be employed to measure Crown timber for Ministry purposes. These scalers are required to attend standardized scaling refresher courses on a regular basis so that they are kept fully versed in the latest measuring techniques and to ensure that high, uniform scaling standards are maintained.

Wood measurement practices in Ontario are under constant review, and new methods are continually explored to ensure that scaling methods keep abreast of the latest harvesting techniques.

During 1978-9, 1.637 million m³ (5.78 million Cunits) were measured as being harvested from Crown land in Ontario. This timber was valued at $35.9 million at the time of

measurement. As of July 1, 1978, the Ministry implemented the recommendations of the Timber Revenue Task Force Report (1975) and introduced the concept of indexed Crown timber dues operationally.

Since that time, the Crown timber dues on Order-in-Council licences have been charged quarterly, reflecting the movement of forest product prices.

Late in the fiscal year and together with the Ontario Ministry of Industry and Tourism, the Branch sponsored and organized a successful hardwood saw mill improvement seminar to achieve higher and better utilization of the scarce, high-quality hardwood resource. The proceedings of this seminar are being published and will be distributed for the benefit of all hardwood saw millers in the Province.

Forest Industry Development

This Section is concerned with the growth and development of the various components of the Province's forest industry. It monitors the demand for, and the supply of, timber products and the pattern of trade in these commodities, and it analyzes resource taxation and pricing. The Section assists in industrial expansion and regional development through industrial liaison, policy development and economic analyses.

Forest industry mills are licensed to operate with respect to Crown and private timber supplies in a specific locality. During 1978-9, 836 such mills were licensed to process timber in the Province. These mills produced a record 3.99 million m^3 (1.69 billion feet board measure) of lumber in response to the high demand in the housing and remodeling industries. Pulp and paper product markets became bouyant during the latter part of 1978 and so continued into 1979.

One of the year's highlights included the signing on December 8, 1978, of the forest management subsidiary agreement to the Canada-Ontario General Development Agreement with the Government of Canada, Department of Regional Economic Expansion. This agreement covers $71.5 million worth of projects over five years to be cost-shared and to include forest access roads, silviculture camps, tree nursery expansions, soil surveys, and research and development work.

An active role is also being maintained in the Province's program of modernization and improvement of the pulp and paper industry through advice to the Ministry of Industry and Tourism.

Mineral Resources Branch

The prime objective of the Branch is to assure the orderly development and optimum use of provincial mineral resources in line with the Ministry's policy of broadening the base of mineral development and processing in Ontario. The most important function of the Branch is to provide the Minister of Natural Resources with in-depth researched information and mineral policy options, as well as to ensure equitable mining tax assessments. Major areas of responsibility for the Branch are as follows:

(a) Development and administration of mineral resource policies;

(b) Analysis of the effectiveness of present public policies in various jurisdictions in respect of mineral resource development;

(c) In-depth world-wide mineral commodity studies on each mineral element in provincial mineral reserves, with priorities set for nickel, copper, zinc, iron ore, precious metals, uranium and structural materials;

(d) Administration of The Mining Tax Act, The Pits and Quarries Control Act and certain parts of The Mining Act;

(e) In-depth analysis of the existing tax systems to develop a more effective mineral taxation policy;

(f) Economic studies of metal and mineral markets and factors affecting Ontario's mineral output;

(g) Federal-Provincial liaison on mineral resources problems;

(h) Determination of an inventory of the Province's mineral resources, commodity by commodity, and commercially viable ore reserves;

(i) Continuing analysis of the mineral reserves position against present and projected world supply and demand for minerals;

(j) In-depth studies of mining and exploration company decision-making processes;

(k) Preparation of plans to stimulate exploration for, and development of, mineral resources in Ontario;

(l) Studies on economic behaviour of multi-national mineral resources companies;

(m) Co-ordination of external research studies to evaluate junior and senior mine financing aspects;

(n) Development of computer models to assess the impact of taxation and environmental controls on the Ontario mining industry; and

(o) Development of a computer data base to store, retrieve and analyze the Census of Mines, Quarries and Sand Pits; Survey of Mining Operations; and Survey of Exploration Companies.

Metallic Minerals

The objective of the Metallic Minerals Section is to provide metallic mineral policy options on a commodity or topical basis. This requires the Section:

(a) To monitor metal market trends as well as technological progress in the mineral sector; and

(b) To monitor policy developments in other jurisdictions and other policy fields with respect to their anticipated impact on Ontario metal mining and processing. During the year the bulk of analytical studies which developed the tools for a quantitative analysis of such impacts were completed and the last ones initiated.

The discussion paper, entitled "The Ontario Metal Mining Industry Present and Future", was re-issued. It is still a fact of life that the health of the Ontario mineral sector depends largely on the health of the economies of the industrialized nations such as the United States, the EEC and Japan and, as was demonstrated in Policy Background Paper No. 5, it depends critically upon often intractible domestic policy programs.

On a commodity basis, a study, entitled "Towards a Nickel Policy for the Province of Ontario", was published as Policy Background Paper No. 4.

This is the first compendium on the nickel industry anywhere, and since publication the projections advanced in the study have been largely borne out by events.

A paper on the role of the zinc industry of Ontario in a global perspective was presented at the Plenary Session of the 11th Commonwealth Mining and Metallurgical Congress in Hong Kong in May, 1978. This paper was based upon the previous year's zinc commodity study. Since then a similar paper with updated material was presented at a meeting of the Bathurst, New Brunswick, Chamber of Commerce.

Mineral Policy Background Paper No. 5, "Investment Effects on the Mineral Industry of Tax and Environmental Policy Changes: A simulation Model," was completed and published. This paper quantified the investment impact of past governmental actions in the area of taxation and environmental policy on the Ontario and the Canadian mineral industry and provides the tools to quantitatively anticipate further policy changes in these policy fields.

Policy Background Paper No. 6, "Factor Substitution and Biased Technical Change in the Canadian Mining Industry", Policy Background Paper No. 7, "The Platinum Group Metals - Ontario and the World", Policy Background Paper No. 8, "World Mineral Markets: An Econometric and Simulation Analysis," and Policy Background Paper No. 9, "Guide to Legislation Affecting Mining in Ontario", were completed and are to be issued during the summer of 1979.

A monograph (entitled "Does Resource Conservation Pay?"), which was directed at the issue of alleged mineral resource scarcities on a world-wide basis, was accepted by the International Institute for Economic Research and published in the summer of 1978.

The mineral inventory work carried out in co-operation with Geological Survey of Ontario staff, which forms an important part of the data base for analysis and formulation of policy options for the Government of Ontario, continued; the mineral inventories of uranium and zinc are under constant review, and the nickel inventory will be completed in 1979.

Work on environmental problems of the mining industry is mushrooming. The major issues here, with which policy in the minerals and in other fields still has to come to grips, are as follows:

SO_2 emissions, the acid rain controversy, the handling of tailings disposal problems, and the change in silica standards. Not all of these issues are being dealt with by the Ministry of Natural Resources as the lead Ministry; all of them are of great technical complexity; and all of them are of potentially deadly impact upon the Ontario metal mineral sector.

Consultant's reports on the changing structure of mine financing and of junior mine financing were published in 1978. Involvement in Onakawana is increasing. Two mine hazard land studies have been completed and are being reviewed. Work on a new Mining Lands Act is progressing.

Liaison with organs of the Federal Government, Provincial Government and some foreign jurisdictions, as well as with mining company representatives, continued on matters pertaining to Ontario mineral policy and mineral industry matters of mutual concern.

As required the Section undertakes detailed analysis and recommendations of alternative solutions for any of the problems that affect the metallic mineral sector of the economy as they assume importance in the eye of the public, the industry or this Ministry.

A major new responsibility for the coming years will be the more effective dissemination of the results of the analytical work carried on in the Section to other government agencies and the general public to increase the understanding of the complexity of mineral sector problems.

Industrial Minerals

The Industrial Minerals Section is functionally responsible for all the activities associated with administration of The Pits and Quarries Control Act and for development of mineral policy options for the Government concerning the extraction and use of non-metallic minerals and structural materials.

The Section's function in administration of The Pits and Quarries Control Act involves a continuous consultation and guidance provided to the Ministry's field offices which, through their mineral resources supervisors and quarry inspectors, are responsible for implementing the requirements of the Act. Moreover, the Section is directly responsible for processing pit and quarry applications from the Sudbury and Sault Ste. Marie areas in northern Ontario.

The policy development function is currently being implemented on a progressive basis to deal with each non-metallic mineral and structural material on the basis of continuing studies of supply and demand for these commodities and analyses of draft official municipal plans, implementing the processes outlined as major responsibilities for the Branch.

In addition, the Section maintains liaison with, and provides its expertize to, producers and consumers, the general public, Regions, Districts and other Branches of the Ministry of Natural Resources, other Ontario Ministries and governments at all levels.

Since the establishment of the Industrial Minerals Section in 1973, the following major mineral aggregate studies were contracted out to consultants and carried out to provide input for the development of policy options:

1. Mineral Aggregate Study of Central Ontario Planning Region;
2. Mineral Aggregate Study of Part of the Eastern Ontario Region;
3. Mineral Aggregate Study of Southwestern Ontario Planning Region;
4. Mineral Aggregate Study of the Sudbury Area; and
5. Mineral Aggregate Study of the Thunder Bay Area.

A major focus of activity in 1976 and 1977 was the Section's involvement in the Ontario Mineral Aggregate Working Party which was appointed in December, 1975, by the Ministry to investigate the problems of the aggregate industry in Ontario. The working party was comprised of people from government and other groups most concerned with the problems associated with pit and quarry operations.

In January, 1977, the working party presented its report, "A Policy For Mineral Aggregate Resources Management in Ontario," to the Cabinet. It offered 64 recommendations on how the aggregate industry problems could be resolved. As a direct result of this report, the Section is now involved in writing a new Aggregates Act to regulate pit and quarry operations in Ontario.

In 1978, the Section initiated and prepared the terms of reference for a bulk transportation study of mineral aggregates which has been contracted out to consultants. The study will complement the previous aggregate studies and is designed to provide essential input into a planning process for the transportation of aggregates from more remote areas to meet future expansions of demand.

In addition, the Section staff participated in a study on abandoned pits and quarries, conducted jointly with the Regional Municipality of Waterloo through the University of Waterloo, and co-ordinated a study of pit and quarry rehabilitation in Ontario connected with the University of Guelph.

Also, an in-house research and a study of short-term demand for mineral aggregate in Central Ontario Planning Region has been undertaken by the Section; it is aimed at developing an economic model for forecasting demand for mineral aggregate on a Regional Municipality and County level. The Section has also undertaken an in-house research on the extraction and rehabilitation of pits in Metropolitan Toronto.

Mineral Statistics

The Mineral Statistics Section is responsible for the following functions:

1. Economic and statistical research as an input to the development of mineral policy options;
2. Development and maintenance of an economic and mineral commodity data base;
3. Annual Survey of mining operations, mills/concentrators, smelters/refineries;
4. Annual census of mines, quarries and sand pits;
5. Collection and analysis of national and international data on all mineral commodities, prices, markets, consumption, imports and exports;
6. Publication of the Statistical Report on the Mineral Industry of Ontario;
7. Publication of the biennual Ontario Mineral Review;
8. Consulting services in the field of mineral statistics to other branches of the Ministry, other Ministries and the interested public; and
9. Administration of Part X - Refinery Provisions of The Mining Act.

The Ontario Mineral Review, 1976-1977, and The Statistical Report, 1974, were published in 1978. To improve the immediacy of the Statistical Report, the combined data for 1975, 1976, 1977 and 1978 will be published in 1979.

The Mineral Statistics Section has been reorganized to meet the following main objectives:

1. Develop a user-oriented computerized mineral data base;
2. Provide the professionals and administrators in the Mineral Resources Group and the Regions with more direct access to the mineral data base (normally without assistance from the Mineral Statistics Section while, at the same time, maintaining the confidentiality of company data by using internally programmed tests); and
3. Increase the input of world mineral statistics by upgrading the level of data management.

Mining Tax Assessment

The Mining Tax Assessment Section is supervised by the mine assessor who has six assistant mine assessors and one contract assistant mine assessor as his staff. The assistant mine assessors reconcile the returns filed with the taxpayers' accounting records and prepare draft assessments for the mine assessor.

Mining tax returns received in 1978 indicated liabilities under The Mining Tax Act of $22,308,494.

During the 1978 fiscal year, 53 assessments were issued. The assessed taxes amounted to $17,842,591.

Ontario Geological Survey

The Ontario Geological Survey provides information on the geology and mineral resources of Ontario to encourage industrial exploration, to provide a basis for land-use planning, and to aid in the development of non-renewable resource policies.

Geological, geophysical and geochemical surveys identify favorable locations for mineral and aggregate deposits and provide increased knowledge and understanding of the geological history of Ontario. Data on mineral deposits are compiled, and areas having significant potential identified. Educational programs and published reports and maps are made available to the public. Additional scientific contributions are made by presenting papers and leading field trips at geoscience conventions.

The Ontario Geological Survey administers the Mineral Exploration Assistance Program (MEAP) whereby the Government reimburses an individual or company one-third of the cost of an approved exploration expenditure (maximum $100,000) in any of six designated areas.

In October, 1978, the Ontario Geological Survey participated in the planning and organization of a rarely held joint conference of eleven geological organizations including the Geological Association of Canada and the Geological Society of America. Held at Toronto, this conference attracted nearly 5,000 registrants. Ontario Geological Survey involvement consisted of providing leaders or co-leaders for 12 of the 25 field trips offered, editing and preparing for publication the 360-page Field Trips Guidebook, chairing several technical sessions, and presenting a number of scientific papers to the conference.

On March 26 to 28, 1979, the first Geoscience Research Seminar was held in Toronto to hear the findings of 23 provincially-funded university research projects completed in the 1978-9 fiscal year. Grants totalling over $400,000 were awarded to 10 universities under the Ontario Geoscience Research Grant Program.

Precambrian Geology

In 1978 a total of 23 field crews conducted Precambrian bedrock geological surveys distributed throughout the Province from Red Lake to Renfrew. Surveyed areas ranged from 185 km^2 to 7,000 km^2 (70 to 2,700 square miles) depending upon the detail and scale of the survey, and in total 24 areas were examined. Of these, 20 projects, comprising the ongoing survey projects, covered about 2,900 km^2 (1,100 square miles) at a detailed scale (1:12,000 to 1:31,680) and about the same total 2,900 km^2 at reconnaissance scale (1:50,000 to 1:126,720).

In addition two projects supported by the Ministry of Northern Affairs, and two projects funded jointly by the Ministry of Treasury and Economics, and the federal Department of Regional Economic Expansion covered an additional 422 km^2 (163 square miles) in detail and 7,700 km^2 (2,950 square miles) at reconnaissance scale.

The objectives of these surveys are to produce interpretive maps of the Precambrian bedrock geology, identify geological environments favorable to the occurrence of mineral deposits, and to identify bedrock features which influence mineral concentration and land use to encourage and guide exploration and resource planning.

Base program surveys concentrated on five major geological belts across the Province, and a regional ground reconnaissance follow-up to airborne uranium reconnaissance work in northwestern Ontario.

The two projects supported by the Ministry of Northern Affairs were located in the Larder Lake and Cochrane areas, and the two projects jointly funded by the Ministry of Treasury and Economics and Department of Regional Economic Expansion, Canada, were focussed on the Renfrew area.

Base program projects undertaken in 1978-9 represent components of long-term programs in five high mineral potential belts. These projects included: (1) surveys in the Red Lake, Birch Lake, and Bamaji Lake areas of the Uchi belt; (2) surveys in the Zarn Lake and Howard Falls areas and a special study completed in the Crow Lake-Savant Lake area of the Wabigoon belt; (3) surveys in the Hemlo, Missanabie, Batchawana and Swayze areas; regional studies of radioactive diatreme structures; and studies of the Kirkland Lake-Timmins regional stratigraphy and mineral deposits, all in the Abitibi-Wawa belt; (4) surveys in the Lake Wanapitei and Cobalt areas, and a special study of volcanic rocks associated with uranium bearing rocks north of Lake Huron, in the Southern Province; and (5) surveys in the Long Lake and Harvey Township areas of the southern Grenville Province.

A helicopter supported survey in the Burntbush-Detour Lake area encompassing the Amoco gold discovery, and a survey of potential uranium-gold bearing strata in the Larder Lake area, were completed for the Ministry of Northern Affairs.

In the eastern Grenville Province, a regional mapping project covering much of Renfrew County, and a detailed survey in the area southwest of Dacre, were completed for the Ontario Ministry of Treasury and Economics and the Canada Department of Regional Economic Expansion.

In support of the West Patricia Land Use Plan, a ground investigation, to evaluate uranium potential and classify mineral deposits, was completed subsequent to airborne uranium reconnaissance surveys under the Federal-Provincial Uranium Reconnaissance Program in northwestern Ontario.

In addition to field operations, geological compilation maps (1:253,490) of the Kenora-Fort Frances and Sioux Lookout-Armstrong areas were completed, and one of the Red Lake-Birch Lake area was in preparation, and scientific papers, talks, and field trips were prepared for industry, scientific, and Ministry groups.

Engineering and Terrain Geology

The Engineering and Terrain Geology Section is responsible for the survey and analysis of all geological materials younger than the Precambrian. These include the sedimentary rocks of Paleozoic and Mesozoic age of the James Bay lowlands and of southern Ontario, together with the great variety of glacial deposits of Quaternary age which cover the entire Province.

Major thrusts in these responsibilities are the stratigraphic mapping of the rocks of these ages and the preparation of an inventory of mineral aggregates throughout the Province. An important role is to provide information to, and liaise with, municipalities for aggregate resource planning.

Nine Quaternary geology field parties were active during 1978. Several areas in southwestern and southcentral Ontario, Muskoka and Renfrew Countries, and the Englehart-Kirkland Lake region were mapped. A major drilling and field mapping program was implemented in the Smoky Falls region of the James Bay lowlands to investigate the Mesozoic geology, lignite, and industrial mineral resources of the area. A study of Paleozoic limestone and dolostone resources of Manitoulin Island, funded by the Ministry of Northern Affairs, began with a preliminary drilling program carried out in the fall of 1978.

Work continued in 1978 on the preparation of aggregate resource inventories for all townships in southern Ontario designated under the Pits and Quarries Control (1971). The engineering terrain evaluation of approximately 370,000 km^2 (143,000 square miles) of northern Ontario, that was begun in 1977 with funding provided by the Ministry of Northern Affairs, was extended to additional areas in 1978.

The Section also continued to supply technical support to a study of the physiography and surficial geology of northwestern Ontario by the Ontario Centre for Remote Sensing.

Geophysics/Geochemistry

Staff scientists of the Geophysics/Geochemistry Section carried out a radiometric survey in northwestern Ontario and a gravity interpretation study of two metavolcanic-metasedimentary belts in 1978.

Geophysical survey crews co-operated with geological survey crews to obtain reconnaissance information by helicopter survey on uranium potential for Ministry land use planning in the West Patricia area of northwestern Ontario.

Geophysical staff also performed an interpretative study of gravity data previously collected for the Birch-Uchi-Confederation Lakes Area and for the Red Lake Area. This study, covering 21,320 km^2 (8,230 square miles), utilized over 5,100 Bouguer values and 2,571 rock densities to obtain spectral analysis and two dimensional modelling for two 'greenstone' belts.

Results of an airborne electromagnetic-magnetic survey of the Red Lake metavolcanic belt, funded by the Ministry of Northern Affairs consisting of 9545 line kilometres (5,930 line miles) of data, were released in September, 1978.

The Section was also responsible for planning reconnaissance airborne gamma-ray spectrometer and regional lake sediment geochemical surveys as part of the Federal-Provincial Uranium Reconnaissance Program. This joint program provides data base information for uranium mineral exploration and for the geological assessment of Ontario's uranium potential.

During 1978, the results of two Federal-Provincial airborne gamma-ray spectrometer surveys were released: in northwestern Ontario, a 35,000 km^2 (13,500 square mile) area covering the North Spirit Lake, and parts of Ooasquia Lake, Stull Lake, and Island Lake, NTS sheets; and in southern Ontario, a 58,000 km^2 (22,400 square mile) area covering the Sudbury, Huntsville, and parts of Tobermory, North Bay, and Lake Simcoe NTS sheets.

Results of a Federal-Provincial regional lake sediment geochemistry survey covering 31,400 km^2 (12,100 square miles) in the Thunder Bay-Schreiber area were released in June, 1978, and resulted in approximately 1,800 claims being staked by the private sector.

Geochronology Laboratory

The Geophysics/Geochemistry Section shares the responsibility for the management of a geochronology program with the Department of Mineralogy and Geology, Royal Ontario Museum. The Jack Satterly Geochronology Laboratory, which was initiated in 1975 by a grant from the Ministry to the Museum, has added a capacity to give a stimulus to the understanding of Precambrian crustal history. This facility is providing absolute radiometric ages (by the zircon-uranium-lead method) necessary for unravelling the geological history of the rocks and related mineral deposits in the Precambrian Shield.

A long-term program of radiometric age investigations is continuing with emphasis on the mineral-rich areas such as the Early Precambrian (2.7 billion years old) metavolcanic belts and, specifically, on stratigraphic correlation problems related to the positioning and timing of ore deposition in these belts. Studies are being conducted in the Kirkland Lake-Timmins, Confederation Lake, and Sturgeon Lake-Vermilion Bay areas.

Mineral Deposits

The Mineral Deposits Section studies deposits of both metallic and nonmetallic minerals, their distribution, geology, reserves and potential. An important role is to provide reserve data and resource potential estimates for use in government planning, particularly for land use, parks and transportation corridors, and as background for studies by the Mineral Resources Branch.

The Section co-operated in the National Uranium Reserves and Resources Appraisal Program and related studies including assembly and computerization of Elliot Lake drill hole data. A provincial study of nickel-copper resources, particularly of the Sudbury area, is continuing.

Other studies included metal distribution maps for silver and base metals; a series of mineral potential maps of the Precambrian Shield to aid in large-scale regional planning; and studies of industrial minerals, including asbestos, silica, and marble deposits. A major study of mineral deposits of the Pembroke-Renfrew area was completed (see Pembroke-Renfrew program) as well as uranium potential charts for southern Ontario and a study of peat deposits.

On a routine basis, many producing mines and exploration sites were visited.

Regional Geological Program

Regional and resident geologists' offices were maintained in the following centres: Kenora, Red Lake, Sioux Lookout, Thunder Bay, Sault Ste. Marie, Sudbury, Timmins, Kirkland Lake, Huntsville, Kemptville, Richmond Hill, and London. Regional and resident geologists provide a consultative service to government, industry and the public on the geology and mineral deposits of the Province.

During the year, visits were conducted on a regular basis to operating mines and prospects, and geoscience data for numerous land-planning functions were provided. A variety of field mapping projects and specific studies were also undertaken.

A library of published and unpublished geoscience information is maintained in each office, including reports of the Mineral Resources Group, reports of other government agencies, and records of exploration activities submitted for assessment work credit.

Mineral Exploration Assistance Program

Government payments under the Mineral Exploration Assistance Program (MEAP) for the fiscal year were $435,467, bringing the total government expenditure since 1971 to $2,983,322. The six designated areas are Eastern Ontario, Red Lake, Atikokan, Geraldton-Beardmore, Kirkland Lake and Cobalt-Gowganda. Open file reports 5114, 5147, 5209, 5230, 5251 and 5272 cover MEAP to March 31, 1979.

Pembroke-Renfrew Program

A four-year mineral exploration incentives program in the Pembroke-Renfrew region was initiated in 1976 with funding from the Ministry of Treasury, Economics and Intergovernmental Affairs. During 1977, a further cost-sharing program was signed with the federal government, Department of Regional and Economic Expansion. This program is designed to renew mineral industry interest in the area by supplying information on basic geology and its relation to the known mineral deposits, and by locating areas of highest potential for each of the commodities likely to be found.

Field work and studies of collected data continued in three projects of the Mineral Deposits Section — industrial mineral potential, base and precious metals potential, and uranium and thorium potential. The main thrust of the 1978 program was in selected studies related to stratigraphy and metallogenesis.

The Precambrian Geology Section completed a 250 km^2 (96 mi^2) detailed geological survey of the Khartum area and a 6,000 km^2 (2,300 mi^2) reconnaissance survey of southern Renfrew County.

Northern Affairs Development Program (NAGS)

In the summer of 1977, the Ontario Geological Survey commenced a three-year Northern Development Program funded by the Ministry of Northern Affairs. The program has three objectives — to stimulate exploration for fossil fuels in Ontario, to stimulate mineral exploration throughout northern Ontario, and to improve the land capability and aggregate potential data base to assist northern community and regional planning.

The 1978-9 program included publication in September, 1978, of 16 photomosaic based maps, the results of an airborne EM survey to stimulate exploration in the Red Lake area.

An aeromagnetic survey was completed in the Marshall-O'Sullivan Lakes Area covering 11,866 line kilometres (7,374 line miles) at 200 metre (1/8 mile) spacing; and approximately 8,000 km^2 (3,100 square miles) were covered by a multifrequency airborne electromagnetic survey over the southern and eastern parts of the Cretaceons Moose River Basin (Geophysics/Geochemistry Section).

A helicopter supported geological survey of the Burntbush-Detour Lakes area north of Lake Abitibi covered 4,000 km^2 (1,500 square miles) (Precambrian Geology Section).

Other work included a study of the surface and subsurface geology of the southern portion of the Moose River Basin, quaternary geology mapping in the New Liskeard area, and engineering terrain anaylsis for land capability over 139,000 km^2 (53,600 square miles) between 49° and 50° north latitude (Engineering and Terrain Geology Section).

Northern Ontario Geological Survey (NOGS)

Commencing in 1978, the Ontario Geological Survey, funded by the Ministry of Northern Affairs, began a six-year program designed to stimulate further mineral exploration and development in northern Ontario. The program includes geological, geophysical, and geochemical surveys; mineral deposit studies; preparation of data series maps; and a reconnaissance survey of engineering characteristics and aggregate capability of northern land-forms. Expenditures during the fiscal year were approximately $750,000.

Kirkland Lake Initiatives Program (KLIP)

Also commencing in 1978 was a special five-year program to improve and otherwise stimulate mineral exploration in the Kirkland Lake area. Funded equally by the Ontario Ministry of Northern Affairs and the Canada Department of Regional and Economic Expansion, the Ontario Geological Survey will manage the program which includes Quaternary field surveys, Precambrian stratigraphic mapping, mineral deposit studies, basal till sampling, airborne geophysical surveys, data map compilation, and a technical evaluation service. Expenditures during the fiscal year were approximately $400,000.

Geoservices

The Geoservices Section provides a support and service function to Ministry geoscientists, management and public.

Geoscience Information Office

This Office organizes and conducts classes of instruction in geology and mineral exploration, answers geological inquiries from the public, and prepares or assists in the production of popular brochures and guide books on the geology of Ontario.

During the year, education courses included one basic course, two field courses, and several field trips. During the summer, half-day geological talks were arranged for most of the Junior Ranger camps.

The following publications were released during the year: an updated "Rocks and Minerals Information", "Geological Highway Map - Southern Ontario", and a revised "Geological Guide to Cyprus Lake Provincial Park". One field trip was conducted for the Toronto '78 Field Trips Guidebook.

Scientific Review Office

This office is responsible for the scientific review, editing, and publication of all geoscience reports and preliminary maps. The following were printed during the year:

Geoscience Reports, Geoscience Studies	15
Open File Reports	26
Miscellaneous Papers, Miscellaneous Publications	14
Colored Maps (cartography by Lands and Waters)	19
Preliminary Maps	445

In addition, 27 reports were in progress and under review, and several hundred illustrations were produced by the drafting unit.

Geoscience Data Centre

The Centre performs tasks related to the gathering, research, compilation, and computer processing of geoscience data on mineral deposits of Ontario; indexes publications released by the Ontario Geological Survey and reports submitted for assesment work credit; and within its means investigates and improves upon existing data handling systems.

A computer-based file containing locational and geological data on 511 uranium deposits in Ontario was created. The previously established file, with data resulting from drilling uranium-bearing formations in the Elliot Lake area, was updated and includes presently 1,010 drill holes. Some 140 source records for marble deposits in southern

Ontario, excluding the Renfrew-Pembroke area, were compiled.

Indexing of Ontario Geology Survey publications, assessment reports, and reports received under the Mineral Exploration Assistance Program continued. The indexed information is stored in the computerized Ontario Index to Geoscience Data which at the end of the year covered more than 10,000 reports and maps.

In addition to retrieving data requested by the user, the capabilities of the index have, amongst others, been applied to produce Miscellaneous Paper 77, "Index to Published Reports and Maps, Division of Mines, 1891 to 1977". It lists, for ease of reference, the publications by document number, author name, and geographic entity.

The Centre participated in the development of a system to store and process chemical analytical data on rock samples collected by OGS staff. Computer programs for data manipulation were written, and file building is scheduled to start later this year.

As part of the five-year Northern Ontario Geological Survey (NOGS) program, funded by the Ministry of Northern Affairs, the Data Centre is involved in a Data Management Project. It includes — (a) increasing the NTS detail referenced in the Ontario Index; (b) preparing a General Index to publications released since 1965; (c) compiling mineral deposit data on gold; and (d) building a computerized mineral deposit index file.

The Assessment Files Research Office maintains for public use a library containing all technical surveys filed for assessment credit or filed in accordance with the Mineral Exploration Assistance Program (MEAP).

An important addition to this depository was made by transferring the mineral deposit files, which are being compiled by the Data Centre, to the Research Office. Also filed and made available for public examination are company prospectuses and summary reports received from the Ontario Securities Commission.

As a follow-up of last year's feasibility study on implementing an integrated province-wide indexing, microfilming, and filing system for industry exploration reports, a detailed design study was started near the end of the year.

Geoscience Laboratories

The Geoscience Laboratories provide scientific support for the programs of the Mineral Resources Group. The service includes assistance to the private sector as well as in-house activities. Fees are charged for outside work to avoid competition with private laboratories.

Analytical Laboratory — The laboratory scientists conduct research on analytical techniques and provide a wide variety of analyses on geological materials. Their work ranges from the determination of major constituents of rocks and ores to the geochemical analysis of soil, rock, water, and vegetation samples for trace elements. The laboratory is equipped with up-to-date analytical equipment including a computerized multi-channel x-ray spectrometer, emission spectrographs, and absorption apparatus.

The laboratory continued to support reference material projects sponsored by CANMET and Canada Centre for Inland Waters. Data for the uranium ore BL-1 (CANMET) and sediments WQB-1 and WQB-2 (CCIW) were submitted for inter laboratory quality control.

Methods development and research continued to be important for meeting program needs. A paper, entitled "Semi-Automated Determination of Antimony in Rocks", was published in Analitica Chimica Acta in October, 1978.

The following new methods were developed over the past year: a rapid method for determining sulfur and carbon using the Leco CS 46 induction furnace; and automated technicon analyzer system for analyzing fluorides; a new x-ray method for cerium and neodymium; an automated soft rock program on the XRF quantometer; and a new bead fusion technique for the rock program.

Mineral Sciences Laboratory — The Group conducts examinations, consultations and projects for the Ontario Geological Survey, the public and mining companies. It also conducts research with respect to mineralogy, petrology, and physical testing. Mineralogical studies involve the use of petrographic and X-ray diffraction techniques.

The laboratory assisted with analytical, mineralogical and physical testing in the following geological projects: Study of Ontario Peat Bogs; Mineral Exploration Incentives Program for Pembroke-Renfrew Region; Alkali Rocks and Carbonatites of Ontario; James Bay Fossil Fuels Exploration Project; Atikokan Gold Study; Manitoulin Island Resource Study; and various clay mineral studies.

Provincial Parks Branch

The number of campers using Ontario Provincial Parks in 1978 was 1,430,751. These campers stayed a total of 3,102,508 nights.

The number of provincial parks in operation increased from 126 to 128 with the addition of Fathom Five Provincial Park, a 9,800 ha (24,216-acre) Natural Environment Provincial Park at Tobermory, and Awenda Provincial Park, a 1,915 ha (5,732-acre) Natural Environment Provincial Park near Penetanguishene. (While available for public use in the summer of 1978 Awenda was not scheduled for official opening until 1979.)

Improvements, particularly to water, sewage, roads and electrical distribution systems, continued to be priority projects throughout the park system.

Visitor Services Interpretive Program

Good progress was made in improving the type of information given in the individual park leaflets. Seventeen leaflets have now been completed. Seven new Audio Visual shows were produced.

Progress continued to be made in the implementation of regional visitor services plans. Greater emphasis was placed on the training of seasonal staff and resulted in improved delivery of programs. Self-use facilities were expanded and improved in keeping with the visitor services plans.

Recreational Land Acquisitions

Work continued on the evaluation of future parkland with emphasis on increased recreational facilities for southern Ontario residents. During the year, 2,064 ha (5,100 acres) were acquired for Outdoor Recreation purposes.

Master Planning

In response to requests from many interested individuals and organizations concerning the official status of master plans for Provincial Parks, an amendment was made to The Provincial Parks Act in June, 1976. The term "master plan" is now defined in the Act. The amendment also authorizes the Minister of Natural Resources to prepare and approve a master plan for any existing or proposed provincial park as well as carry out periodic reviews and make necessary alterations to an approved master plan.

To date 20 master plans have been approved by the Minister, 14 are pending final review and approval, and 30 others range between initial and advanced stages of preparation. Thus approximately half the provincial parks have master plans either completed or under way.

Public participation programs continued for several planning projects such as Kettle Lakes and Greenwater to encourage maximum public involvement in the decision making process.

The five-year review involving a public participation program was initiated for the Algonquin Provincial Park Master Plan.

Winter Parks

During the winter of 1978-9, Sibbald Point Provincial Park, on Lake Simcoe, was the only provincial park providing full services for camping, including electrical outlets, heated washrooms, fuelwood and ploughed roads. Regular fees were charged. At Algonquin Park, the Mew Lake Campground was open for winter camping free of charge, but with limited facilities and no electrical outlets or drinking water.

Other parks — such as Arrowhead, near Huntsville; Pinery, on Lake Huron; Rondeau, on Lake Erie; and Bronte Creek, near Burlington — were open for winter day-use. Facilities included groomed cross-country ski trails, snowmobile trails, outdoor skating, snowshoeing, ice fishing and tobogganing. Regular fees were charged.

Remi Lake, near Kapuskasing, continued to operate a ski tow and offer cross-country skiing and tobogganing.

Many other provincial parks throughout the province offered groomed trails for snowmobiling and cross-country skiing on a day-use basis, and maintained limited facilities such as ploughed parking lots and vault toilets for the convenience of the public. No fees were charged.

A publication, entitled "Winter Outdoors", was issued for the first time to provide a condensed description of recreation opportunities in all provincial parks during the winter season.

Winter Trails

During the 1978-9 winter season, $500,000 was made available through the Winter Trails Recreation Program in the form of grants to assist trail clubs and Conservation Authorities with the grooming and maintenance of more than 12,875 km (8,000 miles) of snowmobile and cross-country ski trails throughout the province.

The Ministry maintained 1,610 km (1,000 miles) of snowmobile trails and cross-country ski trails on Crown land. In addition, many provincial parks offered facilities for these popular activities.

Access Points

Approximately 1,400 access points with parking areas and boat launch ramps were maintained to provide access to lakes and rivers.

Interior Camping, Canoe Routes

During 1978, 93,000 people entered Algonquin, Quetico, Bon Echo and Killarney Provincial Parks for interior canoe camping and hiking.

In 1978 regulations concerning the use of motor-powered boats in Algonquin Provincial Park were amended as part of the implementation of the park's Master Plan. Motor boats will be restricted to 27 lakes as per the following schedule: 16 lakes will have no restrictions on horsepower ratings for motors; on 11 lakes motors not exceeding 10 horsepower will be permitted; and on 12 lakes motors not exceeding six horsepower will be permitted except during July and August.

In total, the Ministry managed 24,140 km (15,000 miles) of canoe routes in provincial parks and on Crown land.

Provincial Parks Policy and Park Classification

A policy for the Provincial Park system was approved by the Government in May, 1978, after considerable review with

the Provincial Parks Council and other Ministries of the Government. The policy details a goal and a set of objectives for Provincial Parks, the principles by which the parks will be planned and managed, and a revised park classification scheme. Six distinct park classes are established: Natural Environment, Wilderness, Recreation, Nature Reserve, Waterway and Historical.

More detailed policies for each park class were released in September, 1978, in a manual entitled "Ontario Provincial Parks Planning and Management Policies". These policies provide direction for zoning of environmental, recreation and visitor services management.

Park User Survey

A visitor survey program, initiated in 1974, was continued in 1978 with surveys of day-visitors and campers in 20 parks. The purpose of the program is to obtain information essential to the planning and management of provincial parks and provide an opportunity for public comment. Parks are surveyed on a rotational basis.

Waterways Areas

A waterway identification and evaluation exercise has produced an inventory of the Province's most promising rivers for waterway designation. More detailed investigation of the most highly rated rivers of that group is now under way to determine the costs and benefit of establishing additional waterway provincial parks.

Nature Reserves

Draft frameworks for the systematic identification of provincially significant natural features and environments have been reviewed, and appropriate revisions are under way. These frameworks will be employed to help identify and evaluate potential nature reserves, as well as to measure the extent to which our natural diversity is being protected within the provincial park system.

The Schreiber Channel Provincial Nature Reserve was placed in regulations under The Provincial Parks Act, increasing the number of Provincial Nature Reserve Class parks to twelve. This park contains an extremely significant Precambrian outcrop and fossil site.

Regional Systems Planning

Work continued in 1978 on regional park systems planning. A number of regions have produced preliminary evaluations of existing parks and park reserves and estimates of needs related to protection, recreation, heritage appreciation, and tourism objectives. Production of initial regional park systems plans is scheduled for 1980-1.

Site Planning, Facility Design and Development

Decentralization of the site planning section was completed in October, 1978. Landscape architectural services, formerly provided at Maple, Ontario, are now based at the regional offices. A central unit for special projects has been retained in Toronto.

Provincial Parks Council

The Ontario Provincial Parks Council was established in October, 1974, to advise the Minister on provincial parks issues. The Council's third annual report was submitted to the Minister in July, 1978, outlining deliberation and recommendations on a variety of issues including park policy, mining in parks, tourism, visitor services, Algonquin Provincial Park, Quetico Provincial Park and Lake Superior Provincial Park.

The Council held public hearings during the year in Toronto, Windsor, Killarney and Peterborough and examined a variety of issues including the leasing of parks, reservation system, acid rain, park planning and legislation.

Dr. George Priddle, from the University of Waterloo, continued to serve as Chairman of the 10-member Council. The Council initiated a comprehensive five-year review of the Algonquin Provincial Park Master Plan.

Provincial Parks and Tourism

The Ministries of Natural Resources and Industry and Tourism examined means whereby provincial parks might make a greater contribution to Ontario's tourism industry. Three proposed areas of emphasis were identified in the studies. They included concepts related to park operations, marketing and commercial investments. Detailed proposals will be developed for further consideration by the government.

Wildlife Branch

The objective of the Wildlife Branch is to provide:

A wide variety of wildlife-based outdoor recreational opportunities accessible to, and for the continuous benefit of, the people of Ontario;

A continuous contribution to tourism and its related industries;

An optimum contribution to the economy of Ontario by regulating the commercial utilization of wildlife; and

The protection, conservation and enhancement of the wildlife resources of the Province and their habitats.

Moose Management

A comprehensive moose management policy and plan have been developed in light of continued high demands on a declining moose herd by the public for hunting and viewing.

Attempts to reduce the annual mortality, through hunting season manipulation, closure of seasons for non-residents and increases in non-resident licence fees, have not effectively prevented further deterioration of the herd. After four years, there still are areas where overharvesting by hunters and predators is occurring, and much good moose range remains understocked in consequence. The provincial herd remains at a low level of 80,000, which is about one-half the capacity of the range to sustain.

A controlled moose hunt was carried out in the Larose County Forest, 40 km (25 miles) east of Ottawa. The hunt lasted five days at which time the planned harvest of 20 moose had been reached. This particular hunt demonstrated a method of using controlled hunts for big game in southern Ontario and the acceptability of the methods used to control numbers of hunters. A lottery system was well accepted by the very large number of prospective participants in this hunt.

A second controlled moose hunt on Crown Lands was planned on an experimental basis in the Kapuskasing-Hearst areas (WMU 23) for the fall of 1979. The prime objective of this system of licensing hunters is to define and resolve problems related to allocation of the resource and develop the best procedures for carrying out more highly organized hunts in the future.

The development of standards and guidelines for assessing moose harvests, along with the delineation of wildlife management units, was undertaken.

A 16 mm film, on MNR's moose management entitled "Monarch of the North", was produced. It is available to the public and is suitable for educational use as well as entertainment.

Deer and Bear Management

Proposed deer management policies and programs were tentatively approved by the Minister. Staffing and funding requirements are now being considered.

The number of deer in the forested areas of the northwest fluctuates with winter conditions and predation. In the forested areas south of the French and Mattawa Rivers, deer numbers are declining as a result of hunting, predation, illegal kill, decreasing habitat quality, and unfavorable winter conditions. The proposed deer program, designed to improve conditions wherever possible, may be operational by 1980.

In the agricultural south, deer numbers are increasing, causing highway accidents and interference with agriculture.

Methods are being sought to allow the harvest of deer in agricultural areas.

Two 16 mm films have been produced to provide specific information concerning the proposals embodied in the deer management program and methods by which the public can assist the Ministry in habitat improvement. The films, entitled "Shadows in the Forest" and "Habitat Management for White-tailed Deer in Ontario", are now available through district offices.

Black bear numbers, though difficult to assess, are believed to be generally constant. Hunters take about 4,000 bears per year, and the number of bear hunters is increasing. Bears causing conflict with agricultural activities or public safety are trapped, and relocated whenever feasible or destroyed.

Upland Game and Waterfowl Management

Development of alternatives for new program initiatives in the management of upland game is in progress. Improved population inventories have been developed for selected species. Inventories for pheasant and bobwhite quail have been refined in consultation with field staff responsible for implementation.

A reassessment of raccoon hunting and trapping has resulted in a shortened open season, from October 15 to December 31 of each year. The reduced season is expected to optimize benefits from the raccoon resource which is valuable to both hunters and trappers.

Most populations of small game appear stable. Hungarian partridge, woodcock, showshoe hare, and ruffed grouse should again be abundant in the next hunting season.

Squirrel, European hare, cottontail rabbit, and bobwhite quail populations were lower than normal in some areas in 1978. This is largely attributed to natural fluctuations, and in the case of bobwhite, severe winters. Recoveries in numbers of these species in 1979 is being monitored.

A program to produce a wild breeding population of Canada geese in southern Ontario, started in 1968, has been most successful. Viewing and hunting opportunities continue to increase in association with an estimated population exceeding 20,000 birds. Geese have become over-abundant in some areas along the Toronto waterfront where conflict with other uses of the land has been increasing. Management efforts to reduce the waterfowl population are continuing in co-operation with the Canadian Wildlife Service and a number of other agencies.

Waterfowl banding projects in 1978, to gather important management data for use by Ontario and the United States, will continue in 1979. Ontario is co-operating with the Canadian Wildlife Service and a number of Atlantic and Mississippi Flyway States where the birds are hunted or spend the winter.

In the Hudson-James Bay lowlands, the muskeg was free of snow early in the spring of 1979, and production of Canada and snow geese is expected to be much improved from 1978. In most of southern Ontario, duck production is expected to be good in 1979 due to favorable water levels, also an improvement from 1978.

Waterfowl management policies and programs in Ontario are under review and will be the basis for establishing some form of agreement for management with the Federal Government.

Non-Game Management

Ontario's wildlife program is directed towards the management of all species of wildlife as opposed to the management of only game or commercial wildlife. The non-game and non-commercial components of the program have

evolved more slowly than those which have more measurable social and economic results. Concern for non-game wildlife has been demonstrated in the over-all wildlife program of the Province for several decades, initially in connection with park naturalist activities, and later, in the 1970s, within the framework of an endangered species program.

Plans are now under way for the development of comprehensive policies which will incorporate the established endangered species policy and broader policies encompassing all non-game wildlife.

At present, thirteen species or subspecies are designated under The Endangered Species Act. No new additions to the list have been made since August, 1977, but status assessments for various species are being worked on. Of particular interest is the assessment of candidate endangered and threatened plants.

A considerable effort has been made to provide the Committee on the Status of Endangered Wildlife in Canada with status assessments for a number of species and subspecies of reptiles and amphibians. This work will be of benefit to the program when priorities for studies and management need to be assigned.

Nineteen seventy-nine is the third year of a five-year project to reintroduce peregrine falcons to Ontario. Surveys for active bald eagle nests were repeated again this spring on the Lake Erie shoreline, and censuses of the northwestern Ontario population will also continue.

A survey is under way in northwestern Ontario to determine the number of breeding pairs of piping plovers. Surveys of the Kirtland's warbler will continue in 1979 in a small number of areas which may be key habitat for this species.

Ontario Hydro has rerouted a section of the Middleport-to-Milton 500 KV Transmission Corridor which would initially have passed through habitat of the West Virginia white butterfly in the Halton County Forest. Mitigative procedures were implemented along the new alignment to minimize any effects on the adjacent habitat, and the results have been highly successful. In 1978, a five-year study was developed to investigate the impact of different forest thinning regimes on the habitat of the butterfly. The feasibility of wood production in the butterfly's habitat will be assessed on the basis of the study results.

Wildlife Management Areas

Twenty-nine Provincial Wildlife Areas are maintained in southern Ontario to provide wildlife-based recreation on public land, and similar recreation is available on 13 Wildlife Extension Landowner Agreement Areas established by agreements with landowners. Habitat is managed to produce wildlife for viewing and hunting and to protect wildlife populations.

Planning

Many kinds of plans, including recreational, forestry, mining, housing and municipal development plans, have been reviewed to ensure that wildlife interests are an integral part of planning.

An integrated Provincial plan for wildlife has been undertaken. The first objective is to define more precisely than in the past the provincial government's responsibility for wildlife. The next is to determine an over-all wildlife strategy, and then a work plan for Ontario wildlife.

A cost-benefit study of provincial wildlife areas was undertaken as a preliminary part of a systems planning program for these areas. A study of the implications of the use of native birds of prey in falconry was begun.

A proposal for tax reductions for owners of wetlands and habitats of endangered species was provided at the request of the former Ministry of Treasury, Economics and Inter-governmental Affairs for use in the proposed revision of property taxation.

Broad priorities were established for protection of major migratory bird habitats as part of a task undertaken by eastern provinces and the federal government. The mapping of important migratory bird habitats in southern Ontario was initiated and compilation was completed.

Staff continued to participate in studies of proposed large-scale developments which have the potential of affecting wildlife or wildlife habitat.

Wildlife Services

Ontario's Conservation Officers are responsible for the enforcement of The Game and Fish Act and various other Acts administered by the Ministry of Natural Resources. They are also appointed as Fishery Officers under the Fisheries Act of Canada and as Game Officers under the Migratory Birds Convention Act of Canada; they are authorized to enforce those Acts and regulations thereunder on behalf of the Government of Canada.

During the past year, Conservation Officers laid a total of 9,630 informations resulting in 8,365 convictions.

Wildlife Surveys and Records

Records of four years' hunting and non-resident angling licences are maintained as a service to the public. Statistics on hunting, including participation rates, hunter success and harvest, and characteristics of participants, are obtained through mailed questionnaires. This information supplements and corroborates data obtained in the field, and forms the basis for wildlife management planning.

Furbearer Management

The 1977-8 trapping season saw significant increases in the prices received by trappers for the pelts of furbearing animals. The beaver harvest of 147,556 pelts was worth $3.0 million; 433,163 muskrat pelts were marketed for $2.3 million; and 93,178 raccoon pelts were sold for $2.1 million. All together, 14,725 trappers sold pelts valued at close to $11.3 million. Royalties collected on fur totalled $588,552.80.

A comprehensive fur management manual for use by Ministry staff and trappers was in preparation.

The Ministry trap development program has successfully field-tested a new live-trap (a foot-snare device) used to catch coyotes, foxes, raccoons and feral dogs and cats. While the capture rate with the live-trap was comparable to that of traditional traps, serious injury to animals was much less.

Sixteen instructors were trained in co-operation with Georgian College, Barrie, at a Trapper Instructors course held at The Leslie M. Frost Natural Resources Centre at Dorset. These seasoned and knowledgeable graduates conducted 18 Fur Harvest and Fur Management and Conservation courses for trappers in southern Ontario.

Hunter Education

In 1978, the "Hunter Safety" Training program was expanded to include hunting ethics, wildlife management, wildlife identification, bow hunting and hunter-landowner relations, in addition to the traditional topics of firearm safety, safe hunting practices and survival training. The new program name, "Hunter Education", is a more accurate reflection of the new course content.

The Hunter Safety Development Committee has completed a new Hunting Licence Examination paper which will upgrade the Province's examination standards.

During the year, 879 certified Hunter Education Instructors trained 38,500 students, and the Ministry's hunting licence examiners conducted 35,600 hunting licence examinations. The Ministry's courses on Methods of Instruction and Range Procedure Training were attended by 75 program instructors.

Wildlife Research

Research seeks to fill knowledge gaps by investigations of population dynamics, behavior, physiology, reproduction, diseases and parasites, and interactions between selected species and their habitats.

Investigations of mineral nutrition of moose suggested a strong seeking for sodium, and possibly other elements, at natural mineral licks, and for iron and other substances contained in aquatic plants. Moose also seek salt in highway ditches and a high proportion of vehicle-moose collisions occur in late May and early June when moose are seeking salt most actively.

Studies of the ecology of black bears continued at a high level. More than 50 radio-marked bears were contacted daily throughout the summer of 1978, yielding 5,000 locations, which provided valuable information on habitat use. A new expanding collar allowed us to track cubs and one to three-year-old bears, providing more complete coverage than ever before.

Investigation of vector dispersal, part of the rabies research program, continued to provide interesting observations of short- and long-distance movements of red foxes and coyotes. Experiments in the field verified the efficacy of a large-scale baiting strategy, aimed ultimately at distributing rabies vaccine to wild animals.

Other studies included behavior of moose and deer, use of nest boxes by goldeneye and other ducks in northern Ontario, parasites and diseases of black bears, and numbers and reproductive success of polar bears. Publications on the latter subject, and on long-term deer studies, are in preparation.

Resource Development (Native People)

The resource development programs assist the native Indian people of Ontario in the use of renewable natural resources for their economic benefit. The following projects were carried out during the year under the Federal-Provincial Resource Development Agreement.

Fur. This program provides for the placement of Indian trappers on vacant trapline areas. Aerial surveys are conducted and maps showing live beaver colonies are supplied to the trappers. Transportation of supplies, equipment and furs is also provided. Trappers' workshops are held to promote the improvement of trapping techniques and general handling of pelts.

Commercial Fish. Administrative and operational assistance is provided to native people in the Northwestern Region in their commercial fisheries activities.

Sport Fish. Seven lakes were stocked with lake trout and brook trout on the Garden River Reserve to promote sport fisheries in these waters.

Tourism. Four goose camps were operated during the 1978 season by the Indian people along the James Bay and Hudson Bay coasts. Two goose camps were turned over to individuals. Fort Severn Goose Camp was turned over to Mr. Jack Stoney of Fort Severn, and the Attawapiskat Goose Camp was turned over to Mr. Gabriel Spence. The official presentation to Mr. Spence was made by the Lieutenant Governor, The Honourable Pauline McGibbon. Three camps were provided with assistance and supervision by Ministry staff.

Hide Collection. In 1979, successful hunters provided nearly 11,000 moose and deer hides for the native people of Ontario. The continuing success of this program is due to advertisements, hunter contacts made over the years, as well as the award of a "Bush Cap" to hunters who donate moose and deer hides. Presently there are more than 4,000 native people involved in the craft program. It contributes considerably to the native peoples' economy by providing material for handicrafts.

Timber. Assistance was provided to native people in various timber and lumbering operations, and in reforestation and regeneration programs.

Planning. Representatives of Grand Council Treaty areas, No. 3 and No. 9, Union of Ontario Indians, and CORAID (Central Ontario Regional Amalgamated Indian Development) are members of the Resource Development Committee and assist Ministry and DIAND (Department of Indian Affairs and Northern Development) staff in planning programs of priority for the native people of Ontario as they relate to the renewable resources. Indian Band Councils are also consulted about programs which would prove to be most beneficial to their members.

Game Management. Studies of deer populations, mortality rates and range potential were conducted on Wikwemikong Reserve on Manitoulin Island at the request of the Band Council. The objective of this program is to provide guidance to the band in management of deer on Reserve land. The project is to be completed in 1979.

Northern Policy Development. Negotiations were begun under the Tripartite Agreement (Canada, Ontario and the Chiefs of Ontario) to develop a policy for the management of wild rice, and to recommend a mutually agreeable policy regarding Indian rights to harvest wild rice. A study of the wild rice industry by staff of the University of Guelph was commissioned by ARDA (Agricultural and Rural Development Act) for the Tripartite Wild Rice Working Group.

Staff continue to participate in studies on proposed northern developments which have the potential of affecting wildlife or wildlife habitat.

Fisheries Branch

The objective of Fisheries Branch is to maintain and enhance the fish populations of Ontario as a stable base upon which recreational and economic benefits are provided to the people of this Province.

Fish production potentials of many Ontario lakes have lost their stability during recent decades. General stresses acting on fish populations include excessive exploitation, degradation of habitat and water quality (by land and water based developments and by nutrients and/or contaminants), and side effects of newly introduced or invading species such as smelt and sea lamprey.

Recovery of the former fish production potential of Ontario waters requires a more intensive degree of fisheries management effort throughout the Province. This will include continuing international participation in the Great Lakes Fishery Commission program and an increased fisheries role in water-quality management programs co-ordinated by the International Joint Commission.

The strategy recommended by the federal-provincial Strategic Planning for Ontario Fisheries (SPOF) study was accepted in principle by Cabinet during 1977. This study identified problems affecting Ontario's fish resource and recommended an expanded fisheries program complete with new policies, more staff and additional funding to rectify the problems. Several working groups continued to develop new policies in areas identified by SPOF. Implementation plans have also been developed by SPOF.

Commercial Fishery

The total commercial fish harvest in 1978 was 22.1 million kg (49.1 million pounds), slightly down from 1977. However, strengthening prices raised the total value of the harvest to $15.4 million, up slightly from 1977. As in 1977, baitfish catches were relatively constant, but the total value of the catch increased due to increased prices.

The commercial landings of most species remained comparable to those of the previous year. A notable exception was the harvest of carp in Lake Ontario which declined by 95 per cent because of a closure due to contaminants.

The dominant species in the commercial catch was yellow perch which accounted for 20 per cent of the total landings and 40 per cent of the total value. Most of the perch (88 per cent) came from Lake Erie. As in the past, Lake Erie accounted for more than 70 per cent of the total provincial harvest and approximately 60 per cent of the revenue from commercial fishing.

The Freight Equalization Program continued, under a revised rate schedule, to assist fishermen in remote areas of the Province to meet high freight costs.

Under the federal-provincial Fisheries Industrial Program, a number of projects were carried out in 1977.

Canadian paired trawling was continued in Lake Erie to explore methods of harvesting coarse fish.

A large monofilament-mesh trap net was constructed in Thunder Bay to harvest whitefish. The net was used for further exploration and demonstration of effective impounding gear for lakes in northwestern Ontario.

Fish Culture

The Fish Culture Section is responsible for planning and co-ordinating production of eggs and young fish to be stocked in selected Ontario waters. During the fiscal year, 877 thousand eggs and 6.1 million fish were stocked. Thirty-six per cent of the fish were released into the Great Lakes and their tributaries. All the eggs and the remaining fish were stocked in more than 1,100 inland waters. The eggs stocked included brook trout, lake trout and splake. No pickerel eggs (approximately 7 million in 1977) were stocked due to an egg collection failure.

Approximately 77 per cent of the fish stocked were salmonids — aurora trout (1%), brook trout (21%), lake trout (24%), rainbow trout (15%), splake (8%), coho salmon (3%) and chinook salmon (6%). The remainder were maskinonge (18%), yellow pickerel (1%), smallmouth bass (3%) and largemouth bass (2%).

Maintenance of the fish culture data base continued. Selected field staff began to use the system and to define standard reports and special analyses required by district and regional supervisors, hatchery managers and main office staff to increase the future effectiveness and efficiency of the hatchery program.

Renovation of the main hatchery at Dorion was mainly completed in 1978 and planning for the renovation of Hill Lake Hatchery continued.

The disease monitoring program continued. Two fish culture stations were disinfected to eradicate disease organisms and there was a significant increase in the number of stocks monitored.

An agreement between the Ministry and the University of Guelph permitted the continuation of disease diagnostic services and nutrition studies.

The special projects initiated in 1977 were continued; these included studies on the feasibility of culturing whitefish for the rehabilitation of Lake Simcoe and on techniques for the advanced culture of yellow pickerel.

Fish Habitat Management

The loss of significant portions of fish habitat continues to be a problem. Notwithstanding normal changes during each season, society's activities will constantly stress and degrade fish populations through destruction of habitat. The rehabilitation of lost or degraded habitat is a slow process during which time fish production is very low.

Dams, many in disrepair and abandoned, block migrating fish and limit the production of trout to a level much below the potential. Some dams are bypassed by fishways. With the opening of the fishway on the Lucknow River at Port Albert, the total number of trout, that ascended fishways in 1978 to spawn in the cold, clear upper reaches of Great Lakes streams, reached 8,000.

Other dams are bypassed by trucking fish around them. In 1978, several hundred adult rainbow trout were transported above dams where they spawned successfully.

In addition, 39 adult rainbow trout from Lake Ontario were introduced to the new artificial spawning channel on Cobourg Creek in April 1978. The spawning channel proved successful as fish began spawning soon after their transfer; and in the fall, large numbers of juvenile rainbows were found in the area.

The rehabilitation of fish habitat on Wilmot Creek continued with the installation of half-log structures to provide cover for fish. Monitoring of water quality and related aquatic life also continued and a report describing this work is expected in 1979. Rehabilitation work was initiated on other cold-water tributary streams to the Great Lakes.

The study at Nanticoke continued. By a special arrangement with Ontario Hydro, Stelco and Texaco, the Ministry has undertaken a long-term study of the effects of industrialization on fish and related habitat in the Long Point Bay area of Lake Erie.

The publication of the study conducted with the Ministry of Transportation and Communications on the effects of

highway construction on Galt Creek, Ontario, was prepared, as well as an annotated bibliography on the impact of roads on aquatic systems.

The inventory of aquatic habitat in lakes and streams continued. In 1978, 549 lakes (380,000 ha, 940,000 acres) and 479 km (300 miles) of streams were surveyed. A computerized system to store and retrieve this inventory information is being developed. A total of 570 fishing maps have been printed for public use.

Some fish species in certain waters are contaminated with heavy metals, pesticides and other hazardous chemicals. In 1978, approximately 12,000 fish from 270 waters were collected for testing by the Ministry of Environment. This co-operative program will continue in 1979. The objectives include comprehensive reviews of contaminant levels in fish by water body and sufficient advice from health authorities to assist anglers in deciding how much fish to eat at any one time.

Fisheries Policy Development

Fisheries Policy Development Section is responsible for establishing a planning frame work for Ontario fisheries resources and developing policies to manage these resources.

A slide presentation outlining the proposed expansion of the fisheries management program, entitled Strategic Planning for Ontario Fisheries, was completed, and 22 talks using these slides were made to Ministry staff and public groups by Section staff in 1978.

Input is provided to Ministry strategic land use plans, municipal plans, lakeshore development studies and other plans required. This ensures that fisheries concerns are adequately considered during the planning stage of government projects.

A multi-factor model for calculating probable fish yields from lakes was developed and tested, and a manuscript describing its use and project results was prepared.

Data analyses from the joint federal-provincial angler survey of residents and non-residents fishing in Ontario in 1975 continued. A manuscript report describing this study was prepared in 1978 with a publication to follow in 1979.

Administration of the boating restriction regulation program continued. Eleven regulations were processed and submitted to the federal government for approval and enactment under the Canada Shipping Act.

Liaison between Ontario and the federal government for small craft harbour development continued via the Inter-Ministerial Committee on Great Lakes Access.

Fisheries Research

The Fisheries Research Section undertakes or arranges investigations to provide the basic understanding needed for optimum, scientific management of Ontario's fish resources. It carries out relevant research, publishes the results in internationally recognized scientific journals, and makes its specialized expertise available to all levels of the Ministry.

Much of the research is aimed at improving our ability to predict the impact of man's growing use of waters and fish communities. Staff have become increasingly involved in multi-disciplinary co-operative work with scientists from sister ministries, the federal government, international commissions and universities. Two excellent examples are Project Quinte and the Lakeshore Capacity Study.

The Project Quinte study, which involves scientists from both the federal and provincial Environment ministries and Queen's and Guelph Universities, as well as the Ministry's Lake Ontario research staff, reached an important milestone in 1977. Removal of 80 per cent of the phosphorus from local sewage is now an accomplished fact, and the scientific team has completed the comprehensive studies which documented the pre-treatment conditions in the bay. Publication of these baseline studies is expected later this year in a special volume of the Journal of the Fisheries Research Board of Canada. Improvements in water quality are already evident, and work is now on hand to follow the response of the aquatic community and to direct it, so far as possible, towards restoration of attractive and profitable fisheries.

The Lakeshore Capacity Study is intended to provide a reliable factual basis for judging the degree of development which can be allowed around recreational lakes without seriously adverse effects. The fisheries component has developed mathematical models relating fish catches to fishing effort, and fishing effort to numbers of cottages and other forms of angler access to the lake. It has also developed and applied methods to identify and map important areas in these lakes, which are critical to maintaining fish production, and evaluate the impacts on them of such development activities as dredging, filling, weed removal, dock building, or boating. Besides the ongoing field work a summary of relevant literature has just been prepared. Throughout, close links have been maintained with related Ministry of the Environment and Ministry of Housing programs.

Research on survival, growth and reproduction of hybrid trout under field conditions is being continued. In particular, a new backcross strain of splake hybrid has been developed and was planted for the first time in 1979, in substantial numbers in Lake Huron. Comparative tests of the performance of this backcross strain and lake trout in Lake Huron, implemented in 1977, are continuing.

Analysis of the results of matched plantings of brook, lake, hybrid and backcross trout in small lakes in the Northeastern Region began in 1978 and early results have been prepared for publication. Generally the hybrid trout were much superior in both growth and survival to lake and brook trout.

Progress was made in 1978 on the identification of separate stocks of wild Ontario brook trout, lake trout and whitefish on the basis of their genetic characteristics. We are finding that these species function in many instances as more or less discrete stocks. These stocks are distinguishable by differences in biochemical characteristics as well as their morphology, physiology and behavior, particularly with respect to spawning.

An international symposium called the Stock Concept Symposium (STOCS) is being planned for 1980 to look at the implications of such findings to stock-by-stock fishery management in the Great Lakes area. Several of our staff are involved in the organization, data collection and preparation of scientific contributions on Ontario fish stocks for this symposium.

The development of stocks with biochemical tags to assess rehabilitation projects continued in 1978. Because these tags are inherited they will allow fishery managers to follow very exactly the contribution made by hatchery plantings derived from these stocks, not only in the first, but also in subsequent generations.

At the Great Lakes Research Stations and the Harkness Laboratory in Algonquin Park, investigations are being conducted into the roles of various environmental factors, fishing pressure and stocking programs on the production of game and commercial fishes. For example, attention is being given to the importance of competition from perch, predation by loons, and the particular strain of brook trout planted (wild or domestic) as manageable factors determining the success of

brook trout fisheries in Algonquin Park and beyond.

Special efforts are being made to analyse backlogs of information by machine data processing facilities at Maple and at the field research stations. At the Lake Huron station, data are now available for analysis by machine essentially the same day collected, and substantial progress has been made in making the 30 years of past data similarly accessible. The experience acquired at this unit is now being applied by the Lake Ontario and Harkness Laboratory units, to make their extensive data collections more readily available.

A number of mathematical models, describing various aspects of the behavior of smallmouth bass populations, have been developed by the Systems Ecology Unit. These are being used as aids in defining environmental tolerance limits for this species. Models are also being developed to analyse the effects of different exploitation strategies on commercially important species.

In collecting data, fisheries scientists often obtain information of immediate use to local district management staff and they may advise local management staff. They also act as technical representatives of the Ministry on interministerial and federal-provincial committees, the International Joint Commission for Boundary Waters, and the Great Lakes Fishery Commission.

Fisheries Services

Fisheries Services Section is responsible for developing and carrying out programs relating to data processing, information, training and extension, as well as the preparation of legislation and the printing of fisheries regulations.

Most sales of non-resident angling licences increased in 1978. Non-residents bought 489,577 seasonal licences, 165,095 three-day licences and 5,449 organized camp licences. The sale of non-resident smelt licences (which includes bow-and-arrow fishing for carp) was 8,319.

The Canadian resident angling licence for non-residents in Ontario continued in popularity and sales numbered 27,813.

The Ontario Fisheries Information System (OFIS), a computer-based information system co-ordinated by the Section, provides management information to fisheries biologists. Major developments this year were the formation of an OFIS Management Committee to improve the usefulness and scope of OFIS and technical improvements to increase accuracy and reduce costs.

Population Dynamics

The major function of the Population Dynamics Section is to improve the technical competence of field staff by providing advice and expertise, and communicating the results of recent advances in fishery science and management pertaining to fish community dynamics. Critical review of field reports is an important component of this function. The Section also participates in the Lake Superior, Lake Huron, Lake Simcoe and Algonquin fisheries management committees.

The geographical reference atlas of the 2,000 lake trout waters in Ontario was converted from cassette tape to a computer format. A similar atlas of some 3,600 walleye lakes in Ontario was entered into the computer. Both data bases require some updating and extensive editing before field review.

The Section organized a one-week Percis training session, based on the published results of the Percis International Symposium, for approximately 100 staff in December, 1978.

Lands Administration Branch

Lands Administration Branch is responsible for the administration of Crown lands within the Province and the acquisition of private lands required for Ministry programs.

Land Acquisition

Land Acquisition Section is responsible for the purchase of private lands required for various Ministry programs such as public recreation and wildlife management. It provides assistance in setting acquisition priorities, oversees and approves each purchase, and maintains a computerized inventory of all property acquired. Newly acquired lands are managed on an interim basis to ensure optimum benefits until they are incorporated into Ministry programs.

More than 255,003 ha (630,128 acres) have been acquired since the Section's formation in 1962 — 2,075 ha (5,128 acres) during the past year.

Mining Lands

Under the Mining Act, Mining Lands Section is authorized to manage Crown mining lands as follows:

(a) Ruling on mining leases and exploratory licences of occupation (large tracts of land where normal claim staking is not feasible);

(b) Issuing permits for sand and gravel removal;

(c) Setting policy, formulation and interpretation of statutes;

(d) Auditing Mining Recorders' offices;

(e) Auditing Regional programs relating to all quarry permits and Beach Protection Act Licences issued; and

(f) Assessing all geophysical, geological and other technical survey reports submitted for assessment work.

Under The Beach Protection Act, the Section licences the removal of sand or gravel from beaches, banks or waters of all lakes and streams and regularly monitors such operations. These licences cover removal by private individuals as well as large commercial extractions which provide considerable revenue in the form of royalties. Liaison with Ministry field staff specialists and the Ministry of the Environment ensures that erosion or significant damage to the fish population or local ecology is prevented. Municipalities operating for municipal purposes are exempt from Ministry licensing and supervision.

The program of rehabilitating depleted pits and quarries on Crown lands throughout the Province has been temporarily suspended due to monetary constraints.

Public Lands

Public Lands Section has two primary functions: To oversee and monitor the management of the Province's 90 million ha (222 million acres) of Crown land outside Provincial Parks, and to provide technical support and guidance to the field offices responsible for the disposition of rights in public lands and waters.

Public Land Management involves the guidance and control of the numerous uses and users of Ontario's Crown lands and waters. Programs include the following: educating land users; controlling unauthorized occupations and adverse claims; operating garbage and litter control systems to maintain land and water quality; overseeing construction of roads, pipelines, etc., on Crown land; and controlling development on private land in unorganized territory.

Land disposition involves the granting of rights in land to a wide variety of client groups, i.e. individuals, corporations, government and government agencies. Land is disposed of for various uses by way of freehold and leasehold grants, temporary forms of tenure such as licences of occupation and land use permits, and agreements for the use of water for power generation. The Section also carries our post-disposition follow-up administration of transfers, renewals, cancellations, etc., of tenure documents, including leases in provincial parks.

Land related staff training co-ordination is an important contribution of this Section. Information and advice on public lands are provided to the general public. The main office formulates operational policy, directs field offices through policy and procedure directives, and monitors field performance through periodic field audits.

Starting last year, Crown cottage lots, which were previously offered by lease, are now available for purchase to eligible applicants including Canadian corporations. Lessees of existing cottage lots in subdivisions are allowed to obtain freehold title to their lots.

Titles

Titles Section prepares and maintains a written registry of the legal documents required for the ultimate disposition of Crown lands. It is responsible for the maintenance of the Ministry filing system that is used in conjunction with the registry for the administration of the Crown land base of the Province. A program to computerize the indexes of these land parcels, their survey plans and related file records is well under way and should be completed by 1984.

This Section levies mining acreage tax and carries out procedures necessary to effect forfeiture to the Crown of alienated mining lands when the owners default.

Conservation Authorities Branch

The objective of the Branch is to encourage the conservation and use of water and related land resources by Conservation Authorities by providing policy, funding assistance and management and planning direction to the Authorities.

The 38 Authorities cover most of Ontario south of the Precambrian Shield, as well as sections of northern Ontario around North Bay, Sault Ste. Marie, Sudbury, Timmins and Thunder Bay. They undertake a wide variety of programs to further the conservation, restoration, development and management of the renewable natural resources of their watersheds.

A Conservation Authority is formed as a result of a resolution from two or more municipal councils that petition the Minister of Natural Resources to convene a meeting for that purpose. If the vote of the municipal representatives is favorable, the Authority is established by an Order-in-Council. In general, the Authority's boundaries are then defined on a watershed basis. They may include a single watershed, such as the Grand River System, or a number of smaller and adjacent watersheds, such as the Cataraqui Region.

The Conservation Authorities Act ensures a provincial-municipal arranagement. The membership of each Authority includes representatives of all municipalities situated wholly or partially within the watershed, and up to three members appointed by the Province. Consequently, the initiative and sense of responsibility of the local communities are combined with the technical and financial resources of the Province to protect and develop the watersheds of Ontario.

Conservation Authorities place particular emphasis on water and related land management. They are also involved with auxiliary programs oriented to land use, forestry, fish and wildlife, outdoor recreation and conservation education.

All programs undertaken by the Authorities must have the approval of the Minister of Natural Resources. Each program involves a wide variety of resource management projects that receive financial assistance. Provincial grants are provided through the Conservation Authorities Branch. In some water management projects, the Federal Government may also participate.

The Authority raises its share of the funding by levying its member municipalities and by receiving aid from other sources.

At present, 14 Authorities employ a general manager or director of operations to supervise their programs under the direction of a chairman. Resources managers are supplied by the Province in 24 Authorities, including three instances where the services of a manager are shared by two Authorities.

Conservation Authorities relate to the Ministry's field organization at the regional level. Four regions have program supervisors to assist the Authorities in planning and implementing their resource management programs.

The grants to the Conservation Authorities totalled $32,330,807.51 during the fiscal year.

Administration

The past year saw the Conservation Authorities Branch move ahead with a number of important policies and long-term projects. The Report of the Working Group on the Mandate and Role of Ontario Conservation Authorities was prepared to provide the basis for discussion of the responsibilities of Conservation Authorities and their relationship to the Provincial government and member municipalities in the management of renewable natural resources of watersheds (other than gas, oil, coal and minerals).

During the year, a second Working Group prepared a revised draft of the "Watershed Planning Guidelines for Conservation Authorities". This important document outlines the process and basic procedures to be employed in the watershed planning program of the Conservation Authorities.

Four major comprehensive water management plans are being prepared in the Province. These studies are being undertaken on the Grand River, Thames River, South Nation River and the Lake Simcoe - Couchiching Basin. The Ministry, through both main office and regional representation, together with the respective Authorities and other Provincial Ministries, is represented in these planning studies.

The Environmental Assessment process is playing an increasingly important role in the major programs of the Conservation Authorities. Environmental assessments are being prepared for the proposed Glengowan and West Montrose dams and several other Conservation Authority undertakings.

In recent years, many Authorities have shown a renewed interest in land management programs and this, combined with the recent PLUARG (Pollution from Land-Use Activities Reference Group) Reports, has resulted in a greater emphasis being placed on assisting the private land owner to meet soil erosion, water quality and wildlife habitat concerns.

The boundary of the South Lake Simcoe Conservation Authority was enlarged and now contains an area of 2,613 km^2 (1010 square miles).

Some initiative was expressed regarding the formation of a Conservation Authority in the Kawartha area of southern Ontario, pending a favorable vote by the municipalities during the summer of 1979.

Water and Related Land Management

Programs within this Section relate to water management and flood control, and include projects such as flood plain mapping, environmental assessment, dams, channel improvements, erosion control structures and water quality monitoring. Grants to the Authorities under these programs totalled $22,439,889 during the year.

A total of 22.9 km^2 (8.8 square miles) of land was purchased by the Authorities in 1977 for water and related land management, bringing the total land holdings to 731.3 km^2 (282.2 square miles).

The Authorities operate a total of 281 water control structures. Twenty-two of the Authorities protect the residents of some 193 municipalities through the implementation of approved flood plain regulations. Water quality is monitored by 94 stations within the Authorities.

Conservation Authorities assisted private land owners by carrying out reforestation programs on 242 properties, streambank and gully erosion programs on 124 properties, and other private lands assistance on a further 32 properties.

The Lakehead Region Conservation Authority is in the early stages of a major flood control project on the Neebing and McIntyre Rivers in the City of Thunder Bay.

Construction has begun on the W. Darcy McKeough Diversion dam and channel by the St. Clair Region Conservation Authority. All necessary land has been acquired and contracts 1 and 2 are scheduled for completion in the fall of 1979. The Authority is negotiating flood easements for the dam and reservoir component of the project.

The Nickel District Conservation Authority began construction on the Nickeldale Dam and Reservoir in June of 1978 to provide flood protection on the west branch of the Junction Creek.

Construction continued on the Bennett - West Davignon Diversion project by the Sault Ste. Marie Region Conservation Authority. The project is expected to be completed in 1979.

The Upper Thames River Conservation Authority published the preliminary terms of reference for the environmental assessment of the Glengowan Dam and Reservoir.

The Grand River Conservation Authority completed the final stages of the environmental assessment on some of the water control structures in the watershed.

The Raisin Region Conservation Authority was granted approval for the construction of a drainage channel and a stormwater retention pond to alleviate flooding on the Fly Creek Channel in the City of Cornwall.

The South Nation River Conservation Authority is now in the final stages of the construction of the Chesterville Dam and Reservoir project. Completion is expected in 1979.

The Belleville Ice Control Dams were modified this year by the Moira River Conservation Authority to improve their effectiveness in reducing the risk of flooding on the Moira River.

Landfilling and acquisition of shoreline property were among the activities The Metropolitan Toronto and Region Conservation Authority conducted to further their Waterfront Development Project.

This was the first year of a long-term valley lands acquisition project initiated by the Grand River Conservation Authority. The purpose is to purchase properties designated as being subject to flooding as they become available.

Conservation and Recreation Land Management

This program includes projects related to land acquisition for conservation areas, development and landscape protection, reforestation and woodlot management, outdoor recreation, information and outdoor education, fish and wildlife inventories and pollution abatement. Grants to Authorities under this program totalled $3,973,686.

A total of 4.9 km^2 (1.9 square miles) of property was purchased by the Authorities in 1977 for conservation and recreation land management, bringing the total land holdings to 341.2 km^2 (131.8 square miles). Of this total, 183.6 km^2 (70.9 square miles) are set aside for recreation areas. These recreation areas were used by an estimated 4,798,675 people. Conservation Authorities provided 2,401 serviced and 4,484 unserviced campsites.

Trails operated in the conservation areas in 1977 were comprised of 734 km (456 miles) hiking trails, 79 km (49 miles) equestrian trails, 586 km (364 miles) cross-country skiing and snowshoeing trails, and 616 km (383 miles) snowmobile trails.

The Central Lake Ontario Conservation Authority has purchased additional land for the protection of wetlands and to allow the enlargement of Enniskillen Conservation Area.

The Credit Valley Conservation Authority has completed the construction of the western headland with the J. C. Sadington Park to be opened on that site in early June, 1979. Funding approval has been given to Phase II of the Mississauga Waterfront Plan.

The Grand River Conservation Authority has begun a major management and development program for the Luther Marsh Wildlife Management Area.

The Maitland Valley Conservation Authority has purchased property for the proposed Wawanosh Conservation Area, which will provide an over-all conservation program, primarily for the use of local residents.

The Metropolitan Toronto and Region Conservation Authority acquired property surrounding Gibson Lake, a natural water body in the headwaters of the Humber River. The area, in addition to protecting the headwaters, will be developed for a number of recreation activities.

Construction of a new administration building and resource centre in the Napanee Conservation Area has been undertaken by the Napanee Region Conservation Authority. The new complex will aid in the management of natural resources and is expected to be completed by early June of 1979.

Approval has been given for a multi-year program of the Nickel District Conservation Authority to carry out construction, servicing and improvements to develop the Lake Laurentian Conservation Area.

The Rideau Valley Conservation Authority constructed a new workshop complex in the Baxter Conservation Area to facilitate projects related to water and related land management and also to conservation and recreation land management.

As part of its program to provide greater public access to Lake Simcoe, the South Lake Simcoe Conservation Authority acquired property for the enlargement of the Willow Beach Conservation Area, and shoreline property for the proposed Holmes Point Conservation Area.

The Upper Thames River Conservation Authority has taken a program approach in the capital improvements plan it has for the Fanshawe, Wildwood and Pittock Conservation Areas, as well as the many rural conservation areas in its watershed.

Development work was carried out in many Conservation Areas across the Province.

Surveys and Mapping Branch

Mapping Services

Surveys and Mapping Branch commenced reorganization during the year to achieve a better functional grouping. Three existing sections, Cartography, Drafting Services and Nomenclature, and one new section, Ontario Basic Mapping, were brought together under Mapping Services, which assumed responsibility for mapping support to all Ministry programs. Efforts to co-ordinate the mapping activities of the Ontario Government, its agencies and municipalities, will continue.

Basic Mapping Section

The Government in 1977 approved a Basic Mapping Policy which provided for a program of orderly topographic mapping to cover Ontario at scales that would suit provincial and municipal needs. It also approved a common provincial geographical referencing grid.

The program was to proceed in two stages — start-up for the first three years and main production for ten years, by which time the Province would be adequately mapped. Surveying and mapping would be carried out by private industry and the Ministry would supervise the program with a small monitoring staff.

During 1978 the Ontario Basic Mapping Program was officially implemented, and a Basic Mapping Section was created to manage this and related programs. Funding came late in the year; nonetheless, a considerable amount of mapping was undertaken.

An inter-Ministry committee established initial priorities. Generally eastern Ontario and the area north of the north shore of Lake Huron were given highest priority; 130 medium-scale (1:10,000 and 1:20,000) maps were completed, and an additional 80 maps are scheduled for completion by July, 1979. In a large part of Eastern Ontario, control analysis and installation were commenced, laying a foundation for detailed mapping in 1979. Index maps showing map availability will shortly be available.

The Ministry of Northern Affairs, under its Regional Priority Program, made a valuable contribution by funding what was essentially a three-year bulk-test of the system. In the Wawa-Sault Ste. Marie-Haileybury-Mattawa area, photography and horizontal control were completed. In the Iron Bridge-Espanola area, 60 medium-scale maps were completed and an additional 20 are scheduled for completion in July, 1979.

Large-scale mapping projects (1:2,000) are in hand, covering some 40 northeastern Ontario communities. These projects are all scheduled for completion not later than April, 1980, and five or six northwestern communities are due for commencement early in fiscal 1979. Accurate property map overlays on these large-scale maps have been very well received.

Cartography Section

The Section generates the Provincial Topographic and Territorial Series of maps and handles the Ministry's major map brochures and allied colored graphics. Its greatest work load lies in the preparation of multi-colored lithographed maps for the Ontario Geological Survey and the Outdoor Recreation Group of the Ministry. Important smaller clients include other ministries.

Some highlights included the start of metrication of the Provincial Topographic Series of maps from 1 inch to 2 miles (1:126,720) to 1:100,000 and production of an innovative Geological Highway Map of Southern Ontario prepared for the joint annual meeting of the Geological Society of America, Geological Association of Canada and the Mineralogical Association of Canada held in Toronto.

Demands for field base maps by the Ontario Geological Survey quadrupled as the result of new programs being undertaken by that agency. Assistance was provided to the embryo Ontario Basic Mapping program both with photo mechanical and other support services and through secondment of staff.

Drafting Services Section

The Section provides a wide variety of drafting, mapping and graphic support services to Ministry programs with some minor support to other ministries that lack this capability. Its production is mostly in black and white.

Its major series of maps and plans are essentially graphic indexes to the status of land (most Crown Land) showing the disposition of surface and sub-surface real property rights, or illustrating forest resources, geological and mineral resources, lake resources, land use capability and conservation matters. Prints are available through the Public Service Centre.

Major production was as follows: Forest Resources Inventory base mapping, 42,735 km^2 (16,500 square miles); Forest Stand mapping, 41,440 km^2 (16,000 square miles); Mining claim and Township plans, new bases 50, revised plans 4,763; preliminary geological maps, 77; and miscellaneous charts, tables, graphics, 1,130.

Nomenclature Section

This Section provides the Secretariat to the Ontario Geographic Names Board and is responsible for maintaining a uniform inventory of geographical nomenclature for use by provincial and federal government agencies, particularly in map based programs.

The Board held four meetings at Algonquin Provincial Park, Ottawa, Toronto and Dorset during the year. The Section furnished background data for name submissions to the Board for later approval by the Minister.

The Section researches historical and archival sources for nomenclature information and conducts field nomenclature surveys. During the year it carried out field work in the following general localities: Timmins, Hearst, Kapuskasing, Blind River, Espanola, Chapleau, Wawa, Bracebridge/Penetanguishene, Owen Sound/Collingwood, Niagara, Cambridge and Tillsonburg.

Surveying Services

In 1978-9, re-organization of Surveys and Mapping Branch made Surveying Services one of the three primary divisions within the Branch, encompassing Surveys and Geographical Referencing.

Surveys

Re-survey of township boundaries, carried out by surveyors in private practice under agreement with the Ministry, continued at the same level as in previous years.

Cottage lots were laid out in plans of subdivision as requested in the four northern regions.

Survey service to Regions and other Branches and information and Crown survey records were provided as requested.

Control survey installations, under agreement with several municipalities, were carried on and some completed. Negotiations for new agreements are pending.

Geographical Referencing

A contract was awarded to the University of Guelph for the development of a pilot system for the semi-automated

production of digital maps, associated reports and geocodes.

The Interministerial Committee on Geographical Referencing (ICOGR), formed last year, completed an inventory of 63 geographical referencing systems in Ontario. ICOGR also held a seminar on Geographical Referencing at which 200 delegates from all levels of government attended. The proceedings of the seminar were published. The proceedings include a section on a systematic series of grid cells which ICOGR has since accepted and recommended as a geographical referencing standard for Ontario for those who reference their data to grid cells.

The second precise calibration base line in Ontario established by the Ministry was installed in Scarborough, and a booklet, entitled "Precise Calibration Baselines in Ontario", was published. This booklet describes the conditions and procedures for use, as well as the location and measurements of the Mississauga and Scarborough Baselines.

Specifications and Guidelines for horizontal control surveys in Ontario were prepared and are soon to be published.

Development continued on the provincial horizontal control surveys data bank.

Ontario Centre for Remote Sensing

The Ontario Centre for Remote Sensing conducts projects applying the analysis of aerial photography, other forms of aerial imagery, and data from satellites to resource management and development. Projects are undertaken at the request of ministries, universities and the private sector.

To complement this function, the Centre also conducts research on the development of new methodologies of remote sensing application and on the practical applicability of new forms of remote sensing data. More than 50 research and applications projects were undertaken last year.

The program to map the surficial geology and wetlands of northern Ontario continued in 1978-9 with the completion of field sampling for an area of 150,000 km^2 (57,900 square miles). The past two years' work on this project have resulted in the completion of 15 1:250,000-scale map sheets of surficial geology, covering an area of 270,000 km^2 (104,000 square miles), and, last year alone, 12 map sheets of beach deposits in the Hudson-James Bay lowlands, covering an area of 140,000 km^2 (54,000 square miles), were prepared. Work began on the preparation of detailed reports to accompany the map sheets.

The results of research on two remote sensing methodologies for the assessment of forest regeneration success were submitted to the Forest Resources Group, where they were identified as a landmark in the development of regeneration success survey methods.

The Centre continued the development of an aerial forest sampling procedure. The programs to detect forest damage by disease and infestation were also continued.

The Centre undertook two new forestry-related projects — the identification of trees under stress in the whole Metropolitan Toronto, and the detection on aerial thermography of frost-prone areas on large cutovers, as an aid to reforestation.

Aerial thermographic coverage was obtained of the City of Peterborough for the detection of heat loss from buildings, and a clinic was subsequently held in Peterborough by the Ministry of Energy, with the assistance of the Centre, to present the thermographs of individual houses to the homeowners. A handbook on how to set up and operate a thermography clinic was prepared to enable the communities, themselves, to take over the public-education phase of thermography programs.

Aerial thermography was applied to the detection of groundwater springs. Other projects related to the management of water resources were the development of aerial photographic methodologies to determine the distribution and density of algae in the Great Lakes, and to detect the escape of polluted water from landfill sites.

Two projects were undertaken to establish aerial photographic techniques for detecting subsurface remains of early habitation on sites suspected to be of archeological interest.

Experiments were conducted on the applicability of airborne synthetic-aperture radar to forest regeneration assessment and to the mapping of structural geology.

Several advances were made in 1978-9 in the Centre's airborne sensing program. The use of a computerized system to control the motorized firing of each of several cameras at a different interval was perfected, permitting precise control of the degree of overlap between images. Research that provided more detailed information on the effect of each airborne sensing variable on the data obtained made possible greater consistency in the quality of imagery.

In 1978-9, the installation of the OCRS digital image analysis system was completed and the installation of software provided by the Canadian Forestry Service began.

Five training courses were conducted by the Centre, two courses on remote sensing for land use planning, one on remote sensing and photo interpretation for forestry-related purposes, and two on the on-site identification of forest soils. Two one-day courses were also given to the Ontario Association of Geography Teachers and to staff of the Ministry of Agriculture and Food.

Presentations on the usefulness of remote sensing and on the Centre's new developments were given to Ministry personnel, other ministries, university audiences and representatives of private industry, as well as to national and internatioanl groups.

Advice and assistance in the use of remote sensing imagery and methods of analysis were provided to many hundreds of visitors to the Centre. Two scientific papers were delivered at national remote sensing conferences and two further papers at an internatioanl remote sensing conference held in West Germany.

Land Use Co-ordination Branch

The Land Use Planning, Land Use Liaison, Special Projects and Plan Review Sections, which comprise the Branch, continued to co-ordinate Ministry land use planning. They assisted other ministries and planning agencies, such as municipalities, with land use plans, and maintained a sensitive areas recording system. The Branch updated environmental assessment procedures for Ministry undertakings and co-ordinated Ministry environmental assessment responsibilities.

Strategic Land Use Plan

The strategic land use plan is a very broad and long-term plan to indicate how the Ministry of Natural Resources wishes to use, or to influence the use of, land and water in Ontario. This plan will be the major means of co-ordinating all the more detailed Ministry land use planning such as district plans.

The strategic land use plan consists of: (1) the provincial plan, which outlines the policies to be applied to Ministry land use plans; and (2) a broad land use plan for each of the three planning regions (Northwestern Ontario, Northeastern Ontario and Southern Ontario).

The provincial plan was completed in 1975 and is currently undergoing a revision.

The planning process for the regions was organized in three phases: (a) Background Information; (b) Policy; and (c) Plan. Progress in each of the planning regions is as follows:

Northwestern Ontario. Background information and policy development is complete. A draft of the plan has been prepared but has not yet been approved.

Northeastern Ontario. Background information is completed. A draft of the proposed policy and of the proposed plan has been prepared but not yet approved.

Southern Ontario. The program here is called the Co-ordinated Program Strategy and both background information and policy are completed. The plan has not yet been prepared.

Land Use Planning

Upon approval of the three Regional Strategic Land Use Plans, more detailed land use plans will be prepared for the Ministry's 49 districts. District land use plans follow the same three-phase process and during the past year many districts began collection and analysis of background information.

The Minstry's West Patricia Land Use Plan, occasioned by the proposed licensing of new Crown timber limits north of Dryden to Reed Paper Ltd., will be a composite of the Red Lake, Sioux Lookout and Geraldton District Land Use Plans.

Several Districts also prepared local area land use plans which will guide Ministry programs until the completion of district land use planning.

Plan Input and Review

The land and water base for meeting the Province's long-term natural resource needs must not be adversely affected by the land use plans and actions of others. Seeking to influence these actions through plan input and review is, therefore, an essential activity of the Ministry.

Much of the Ministry's plan input and review activity continues to be directed at municipal planning and at private development proposals, both of which come under The Planning Act. Such planning assistance and review is also carried out with other provincial and federal ministries and agencies. During 1978-9 the Ministry continued to work closely with Ontario Hydro on transmission corridor and generating station locational studies and provide input to the Niagara Escarpment Plan.

The Branch, in consultation with Ministry field offices, completed a final draft of a revised Plan Input and Review Handbook. It is designed to guide field staff and promote consistency throughout the Ministry. The Branch audited five Regions in the plan review activity to help ensure a high level of performance.

In plan input and review, the Ministry responds to activity and demands from outside sources. The number of plan inputs and reviews continues to increase.

Lake Planning

The Ministry's new three-year cottaging initiative, to terminate in 1977-8, was extended for one more year. The program is intended to increase the number of cottage lots provided on Crown land in northern Ontario and determine at what level the program can be maintained.

A report on the initiative was completed and future program direction was proposed. Comprehensive lake plans were prepared by field staff following guidelines in the Branch's Lake Planning Manual.

An order based watershed mapping and evaluation method, suitable for a number of planning purposes, is nearing completion.

Environmental Assessment

The Branch continued to develop class environmental assessments for a number of undertakings. The task of continually refining the Ministry's responsibility under The Environmental Assessment Act was also an important part of the Branch activity.

Special Land Use Related Projects

The Branch continued to provide Ministry co-ordination for two land use related projects: The Reed Proposal and The Royal Commission on the Northern Environment. It also continued to co-ordinate the Ministry's participation in the Lakeshore Capacity Study.

One special project was undertaken at the request of the Management Improvement Plan Office. This involved the direction of work of a Task Force on the Ministry's Resources Planning System. The Branch also directed the Stage 2 Organization Review for the Lands and Waters Group.

In addition the Branch conducted a review of The Resource Access Activity policy relative to location and control of access roads.

The Branch is conducting a study of the need for, and the feasibility of, an information system for planning. This would be a computer based system to store and retreive data for any geographical area within Ontario. A system of this nature will become increasingly important in the future when plans that have been completed will require constant monitoring and revision.

Engineering Services Branch

The objectives of the Branch are to provide for the control of surface waters and the regulation of improvements therein; to design and construct water management facilities to prevent flooding and erosion; to provide an engineering and construction support service to Ministry programs; and to co-ordinate resource access construction and maintenance.

Pre-Engineering and Design

Projects included dams at Berry Lake, Thunder Bay Tree Nursery, Sphene Lake, Maskinonge Lake, Peshu Lake, Mattawa, Graham Lake, Fox Lake and the Kintail Milldam; docks at Springwater Lake, Sioux Lookout, Chapleau and Gogama; and bridges at Vermillion River, Lost Lake, Pikitigushi River, Namakan River, Little Turtle River, Frazer Creek, Thieving Bear Creek, Antoin Creek, Fitzroy Provincial Park, Garden River, Wenebegon River, Kinniwabi River and Goat River.

Other work included the design of a water distribution system for Skelton Lake Hatchery and assistance in the South Nation River Study. Pre-engineering was completed for a weigh-scale at Chapleau.

Soils investigations were carried out for Wenebegon River Bridge and Chapleau Dock. Other soils investigation work was done at the Julian Reed Dam in Norval and at Duffin Creek in conjunction with the Federal Government Sea Lamprey Control Program.

Construction

A water-control structure was built at Berry Lake and construction was completed on dams at Sideburned Lake, Upper Island Lake and Gooseneck Lake. Reconstruction of Maskinonge Lake Dam was commenced.

To increase water storage for irrigation at the Thunder Bay Tree Nursery, the existing dam was extensively modified and excavation was carried out in the headpond.

In the Upper Canada Bird Sanctuary, the second phase of the dyking project (Dyke A) was completed.

Bridges were built at Vermillion River, Lac Seul Indian Reserve Access Road, Pikitigushi River, Antoin Creek, West Aubinadong River and Carpenter Lake. Docks were cosntructed at Manitouwadge and Springwater Lake.

Ponds were constructed at Luther Marsh and Mount Pleasant, and erosion control work was continued along Wilmot Creek.

The water distribution system for Petawawa Fish Hatchery was completed, and a start was made on the installation of metric water level gauges on the Muskoka River watershed.

Maintenance of Hydraulic Structures

Extensive maintenance was carried out at McFarlane Lake Air Base Dock, and repairs and renovations were made to South Procupine Air Base Dock.

Major repairs were made to Kakabeka Falls Bridge, and ice damage to the Keewatin Boat Lift was rectified.

A dock at Stonecliffe was rehabilitated. In addition some 68 other ministry docks and dams were renovated and repaired under the Ministry maintenance program.

Water Management

The Branch provides for the operation of Ministry-owned dams for recreation, fish and wildlife protection, flood and erosion control, and Ministry service purposes.

The Branch provides for the regulation of construction, operation and maintenance of private dams, diversions, channelization, water crossings and other water control structures through administration of The Lakes and Rivers Improvement Act. The following activities took place in the regualtion of private water control structures under this Act:

	1979	*1978*
Location Approvals	258	221
Plans and Specifications Approvals	144	92
Refusals of Applications for Approval	9	23
Inquiries Held Under the Act	1	5
Minister's Orders Issued	3	1
Investigations of Water Regulation Problems	963	650

Great Lakes water levels and flows are continuously monitored through reports and information obtained from the International Lake Superior Board of Control and the International St. Lawrence River Board of Control.

The Branch represents provincial interests on the Lake of the Woods Control Board in the regulation of Lake of the Woods and Lac Seul, and on the Ottawa River Regulation Planning Committee which is developing recommendations for regulation of the Ottawa River, an operational application of a forecast model, development of a flood warning system, a liaison mechanism with St. Lawrence River regulation and an Ottawa River Operating Committee.

Great Lakes Shore Management

The Branch aids in the development of shore management policies and provides technical expertise for the alleviation of flood and erosion damage along Great Lakes shores. Current efforts are aimed at implementing recommendations presented in the Canada-Ontario Great Lakes Shore Damage Survey Technical Report, released in 1975. The main purpose of the survey was to compile data detailing the extent of 1972-3 damages, to provide information on shore characteristics.

A Shore Management Guide is under preparation in response to the Technical Report recommendation that methods be developed to evaluate shoreland management alternatives to mitigate flood and erosion damages. The three basic alternatives investigated are land use regulation, public acquisition and structural protection. A 30 km (19-mile) length of Lake Erie shoreline in Gosfield South and Colchester South townships is being used to develop and test methodologies.

Shore management alternatives will be assessed on the basis of land value, ownership, cost of protective works, erosion and recession rates, flood probability, related cost-benefit studies and qualitative environmental evaluations. The results of the study will be generally applicable along Great Lakes shores and will be circulated to municipalities, Conservation Authorities and planning agencies.

Monitoring of shore processes has been undertaken, as recommended by the Technical Report, to ensure maintenance of current information on shore characteristics. Ground profiles are taken annually and after major storms at

about 165 permanent erosion stations established on the erodible portion of the Great Lakes.

As part of an ongoing Great Lakes public awareness program, a brochure, entitled "Shore Property Hazards", was published as a joint production of Fisheries and Environment Canada and Ontario Ministry of Natural Resources. It is designed to inform the public about the potential hazards associated with living on the Great Lakes shore and has been distributed to municipalities and conservation authorities.

The Branch is involved in References given to the International Joint Commission by the Canadian and United States governments through participation on the Working Committee of the International Diversions and Consumptive Uses Study Board, and on the Working Committee and Coastal Zone Sub-committee of the International Lake Erie Regulation Study Board.

Resource Access Roads

Co-ordination and consultation were provided for the construction and maintenance of forest access roads, and assistance was given to the Northern Ontario Resource Transportation Committee secretariat.

A total of 8343 km (5,182 miles) of forest access, Ministry service, recreational access, public transport and Agreement Forest roads were maintained.

The Ministry also shared, by agreement, the cost involved in maintaining 570 km (354 miles) of private forest roads constructed by industry.

The Ministry's normal program of road construction and reconstruciton in southern Ontario resulted in the completion of 102 km (63.25 miles).

The Ministry participated in road construction funded by the Ministry of Northern Affairs under a cost-sharing agreement with industry for a total of eight miles of forest access road.

The Ministry of Northern Affairs also provided funding for the construction, reconstruction and maintenance of the following in support of Ministry programs in northern Ontario:

	km	*Miles*
1. *Normal Program*		
Forest Access road and bridges	237	147
2. *Regional Priority Budget*		
Forest access roads	50	31
Summer cottage roads	58	36
Crown land subdivision roads	19	12
3. *Northern Ontario Resources Transportation Committee*		
Construction or reconstruction of forest access and public transport roads, bridges, and other projects	90	56
Winter roads	108	67
Snowmobile trails	66	41
Maintenance of public transport roads	166	103

Flood Emergency Response

As "lead ministry" the Ministry maintains a program to co-ordinate the response of the Government of Ontario to flood emergencies declared by the Minister. The Branch administers this program on behalf of the Provincial Co-ordinator.

While a number of flooding and potential flooding situations were monitored by district managers during the past year, there was no requirement for a declaration of a flood emergency by the Minister.

Office of Indian Resource Policy

The Office of Indian Resource Policy was established in 1976 as a separate entity with the responsibility for researching and responding to Indian land claims and other Indian land problems, co-ordinating all of the Ministry's involvement in matters relating to Indian people, and providing a consultant type of role within the Ministry on all such matters.

It performs a Central Registry type of function for all land deals with Indian people by any Ontario Ministry and Ontario Hydro. It is responsible for keeping the Ministry (and Government) aware of the possible extent of future land claims and their significance.

The Office develops Ministry positions on these claims and prepares recommendations to Cabinet. It undertakes research for these in consultation with other Ministries and with the Federal Government and Indian bands and their associations. On the direction of Cabinet, it negotiates the settlement of valid land claims with the Indian people involved. The Office also develops and co-ordinates Ministry policy that has a significant impact on Indian people.

Aviation and Fire Management Centre

Fire Management

A total of 940 forest fires burned over 7524 ha (18,591 acres) in Ontario during the 1978 fire season. Included were 14 fires which occurred within the fire district but outside the area of intensive protection. These fires burned over 3989.4 ha (9,857.9 acres).

Unlike the previous four years in which the province experienced some of its most severe fire seasons, 1978 was considered to be far below average. Since 1917, when Ontario started recording forest fires, there have only been seven years with fewer outbreaks and seven years with a smaller area burned.

Although precipitation throughout most of Ontario was only slightly above normal, the rain fell at regular intervals and prevented the forests from drying to a point where they would cause serious fire problems. Southern and southeastern Ontario experienced drought conditions which resulted in a rash of fires in that area during the latter part of July. This condition re-surfaced again in the fall.

Aircraft utilization was reduced by the Tracker fleet of six aircraft which had to be grounded due to extensive corrosion problems. Four of the aircraft were reconditioned to be operational for the 1979 fire season. They will be based at Sudbury and undergo an intensive two-year development program. A decision will then be made to either stick with, or phase out, the Tracker fleet.

Fire Prevention

There were no major changes in this program from 1977. Car litter bags were produced, and a small berry box was produced with appropriate prevention messages printed on the outside. These are given out in areas where berry pickers increase the risk of wild fires.

Training

Six fire accounting courses, one week in duration, were held from January through March at various locations throughout the province to upgrade fire accounting skills.

A basic fire suppression course (Fire Course I) was conducted during the latter part of June.

Four staff assisted with the Instruction Training Course held at Memramcook, N.B. Ontario and Manitoba shared an Instructor Training Course in March, 1979.

A Fire Weather Course was held during November. This course was able to accommodate two Parks Canada and two Province of Manitoba candidates.

The regions held a series of Fire Service courses, as well as a number of refresher course, to bring their senior fire staff up to date on the latest fire technology.

Development Work

During 1978, a number of projects were undertaken. A relatively inexpensive system that accurately determines the strike locations of cloud-to-ground lightning was developed at the University of Arizona. Two antennae, each with an effective radius of about 322 km (200 miles), and a position analyser to process the strike information, were purchased and installed in northwestern Ontario.

Work on the Landsat satellite imagery project continued to evaluate it for fire management use in Ontario. Forest cover type identification, fuel type identification, cutover identification, water sources, and road, pipeline and Hydro line locations were specifically evaluated.

Various kinds of computer programs, which may aid fire managers in making complex decisions, were evaluated in the North Central Region of the province. These included forest fire occurrence and arrival prediction, fire growth and behavior models, and various prescribed burning, planning aids. Other computer applications evaluated included equipment inventory, aircraft cost and hours accounting.

Work was continued on several co-operative projects of the Great Lakes Forest Research Centre. These projects were in the areas of fire behavior, fire ecology, and prescribed burning research.

Finance and Administration Group

Budget and Financial Analysis Office

This unit is responsible for the final preparation of the Ministry estimates, advising on and monitoring budget allocation changes, analysing financial data, and other finance related matters.

Systems Co-Ordination Office

The prime functions of this unit are to co-ordinate and monitor the computer-systems activities of the Ministry and provide managers with guidance in the development, maintenance and upgrading of these systems.

Administrative Services Branch

Records and Forms Management Section

The Section is responsible for application of effective program techniques, as required by the Manual of Administration, and for the provision of technical advice to all sectors of the ministry.

Records Management

The unit is responsible for maintaining an accurate inventory of all records, records equipment and microrecording equipment; control over the initiation, maintenance, protection, retention and disposition of all Ministry records; conducting feasibility studies regarding all microrecording systems and submitting all proposals to senior management for approval and to Management board when necessary; conducting training seminars for the Ministry in all aspects of records management; developing Ministry file classification plans; and conducting word processing feasibility studies.

Forms Management

The unit is responsible for establishing, maintaining and reviewing an inventory of Ministry forms; reviewing and approving all requests for forms printing; improvement in design of necessary forms by adherence to Ministry and government-wide design standards; providing forms analysis and design service to users; providing technical guidance to form originators; and conducting training seminars in forms management and design for Ministry personnel.

Accommodation Section

The basic role of the Section is the assessment of the accommodation needs identified by each program, the annual preparation of the Ministry accommodation plan for submission by the Ministry of Government Services to Management Board for funds, the co-ordination of services thus provided; and the control of individual accommodation projects. The role relates to the provision of new capital and leased facilities, and the upkeep of existing facilities.

The major construction projects completed during the year included the Huronia District Office, Ignace District Office, Dorion Hatchery Main Station, Dryden Nursery Irrigation System, Swastika Nursery Irrigation System Phase 1, and the St. Williams Nursery Refrigerated Storage Facility.

Supply Section

Supply Management

The unit is responsible for co-ordinating Ministry procurement policy and assisting Ministry offices on procurement matters. Duties include the issue and revision of directives of purchasing; preparation of standard purchase forms and specifications; assistance in preparing contract documents and tendering needs; co-ordination of the Ministry purchasing officer training; and the Federal-Provincial Reciprocal Tax program for the Ministry. A Supply Manual was issued to lend additional support and guidance to our purchasing offices.

Purchasing

The unit is responsible for the purchase of most goods and services for main office and for a few field offices. The unit acts as the Ministry's liaison with the Ministry of Government Services in the purchase of office furniture and furnishings. It establishes bulk purchase agreements and standing offers where feasible, and it offers assistance and guidance on the research and development of new sources of supply. It co-ordinated a "Buy Canada" Exhibition for the Ministry and now assists in the preparation of submissions to Management Board under the purchase of Audio Visual equipment policy.

Central Supply Warehouse

The warehouse provides a warehousing and distribution service for common Ministry items such as forms, publications, maps, uniforms, permits and licences. It is located at 733 King Street West, Toronto, and uses 3580 m^2 (38,500 sqaure feet) of space. It issues a monthly inventory report and assists in the preparation of a semi-annual Forms and Publications Catalogue which is distributed to all Ministry offices. It also provides a small-delivery-van service for daily service between main office and the warehouse, in addition to emergency pick-up service within Metro limits.

Services Section

The resonsibilities of the Section manager include the co-ordination of the Ministry's consumer service and energy conservation programs.

The co-ordinator of hospitality and parking is responsible for arranging Ministry functions, conferences and air transportation and co-ordinating Ministry parking.

Office Management

The unit is responsible for the following:

Design, issue and replacement of uniforms;

Continual updating of the Ministry's listings in telephone directories across the province;

Issue of identification cards and telephone credit cards to Ministry staff;

Distribution of government manuals and their revisions as well as the Ministry's policy and procedure directives;

The equipment inventory control system and main office equipment inventory control records;

The copy room which provides printing services for main office;

The mail room and messenger service; and

The telex operation at main office.

Data Processing

The unit accepts for keying the source documents for the Ministry's production data processing systems; schedules, submits and receives computer runs and sees that reports are distributed to user branches; maintains Ministry magnetic tape library; administers the Ministry's magnetic tapes retained in the library of the Central Computing Branch; maintains sufficient systems documentation to enable a contract programmer to carry out maintenance or minor revisions when requested by user branches; assists user branches in identifying computer problems and suggests means of rectifying problems; and keys data from source documents onto magnetic tape or tab cards in a predetermined format. The cards and tapes are interpreted by the Ministry's computer programs to produce the desired reports.

Public Service Centre

The Centre is responsible for the sale and distribution of Ministry publications, maps, aerial photographs, and hunting

and fishing licences. The maps handled include the Provincial, Fishing, Territorial, Geological and Topographic series, the National Topographic series, and the county maps of the Ministry of Transportation and Communications.

A Natural Resources information booth on the main floor of Whitney Block provides information to visitors and handles general inquiries by telephone.

Fleet Management

Unit responsibilities include the following:

Purchase and disposal of vehicles and equipment;

Development of vehicle specifications;

Licensing of vehicles and trailers;

Issue of gasoline credit cards;

Fleet inventory;

Development of computerized fleet management program; and

Establishment of province-wide contracts for automotive supplies.

Financial Services Branch

The Branch provides accounting and financial adminstrative support services for the Ministry. It maintains records of revenue and expenditure, prepares financial statements, and supervises and co-ordinates the account functions of main office and field offices. Its responsibilities include expenditure control, development of accounting and financial reporting systems, development and distribution of financial policies and procedures, financial and cost analyses, pre-audit controls and procedures, preparation of claims under federal-provincial and sundry other agreements, and control of security deposits.

The Branch also provides financial liaison with the Management Board of Cabinet, the Ministry of Treasury and Economics, the Provincial Auditor, other ministries and agencies, and the Government of Canada.

Financial Report

Statement of Revenue in 000s for year ended March 31, 1979

MINISTRY ADMINISTRATION			
Reimbursement of Expenditures — Government of Canada			
Canadian International Development Agency		$ 12.8	
Sales and Rentals			
Maps, publications, etc	$ 479.1		
Ministry Houses	436.7		
Electrical power	21.7	937.5	
Recovery of Prior Year's Expenditures			
Salaries and employee benefits	$ 27.7		
Duplicate or overpayments, credit notes and goods returned	10.7		
Cheque cancellation	5.3		
Agreement with the Municipality of Waterloo	3.5		
Accident claims	3.0		
Miscellaneous	3.4	53.6	
Miscellaneous Revenue			
Reserve for outstanding cheques	$ 28.0		
Others	3.1	31.1	$ 1,035.0
LAND MANAGEMENT			
Taxation - Mines acreage tax		$ 573.4	
Reimbursement of Expenditures — Government of Canada			
ARDA — Conservation Authorities	$ 497.2		
Dams, reservoirs and channel improvements	78.3	575.5	
Reimbursement of Expenditures — Others			
Recovery of Fire Fighting costs		391.6	
Fees and licences — Mines		427.5	
Sales and rentals			
Leasing and licensing of lands	$ 1,237.2		
Gas and mining leases	827.9		
Land and buildings	824.3		
Equipment	221.3		
Sundry sales	30.9	3,141.6	
Royalties			
Water power	$16,132.3		
Forest protection charges	1,833.0	17,965.3	
Recovery of Prior Year's Expenditures			
Conservation Authorities	$ 127.8		
Agreement with government agencies	9.0		
Remote Sensing	7.6		
Land Acquisition	5.4		
Salaries and employee benefits	4.5		
Miscellaneous	3.2	157.5	
Miscellaneous Revenue		16.9	23,249.3
OUTDOOR RECREATION			
Reimbursement of Expenditures — Government of Canada			
ARDA — Extension of Redevelopment Area Parks	$ 236.7		
Fisheries Industrial Development Agreement	50.2		
Pukashwa National Park	39.9		
Rideau and Trent Canal Waterways and Adjacent Land Use Management	11.6	338.4	
Recreation Areas			
Park entrance and camping fees	$ 6,237.6		
Park concessions	254.4		
Park Miscellaneous	63.9	$ 6,555.9	

Fish and Wildlife			
Hunting and fishing licences	$11,451.1		
Royalties	562.6		
Confiscated articles	32.5		
Miscellaneous — Fish and Wildlife	6.2	12,052.4	
St. Lawrence Parks			
Fees	$ 1,791.4		
Sales	1,438.5		
Facilities	116.6		
Miscellaneous	14.4	3,360.9	
Recovery of Prior Year's Expenditures			
Salaries and employee benefits	$ 5.9		
Winter Trails Recreation Program	4.4		
Miscellaneous	2.7	13.0	22,320.6
RESOURCE PRODUCTS			
Renewable Resource Development			
Recovery of Prior Year's Expenditures			
Regional Priority Projects	$ 125.4		
Managed Forest Tax Reduction Grants	9.2	134.6	
Reimbursement of Expenditures — Government of Canada			
Forest Management			
ARDA — Forest Stand Improvement	$ 483.9		
ARDA — Private Land Forestry	250.0		
ARDA — Expansion of County and Authority Forest in Ontario	61.6		
Commercial Fish and Fur			
Resource Development Agreement	253.9	1,049.4	
Forest Management			
Stumpage	$37,193.5		
Forest products	494.5		
Stock production	242.4		
Miscellaneous timber	87.8	38,018.2	
		$39,202.2	
Non-Renewable Resource Development			
Mining Tax		$41,799.1	
Royalties (Mines)		1,380.8	
Commercial fishing licence		96.8	
Fees, licences		80.5	
Miscellaneous		6.6	
		$43,363.8	82,566.0
RESOURCE EXPERIENCE			
Frost Centre facilities			230.6
TOTAL REVENUE			$129,401.5

Statement of Expenditure in 000s for year ended March 31, 1979

MINISTRY ADMINISTRATION PROGRAM			
Main Office	$ 2,415.8		
Financial Services	1,983.8		
Supply and Office Services	2,920.9		
Personnel Services	909.7		
Information Services	1,332.0		
Analysis, Research and Planning	583.6		
Legal Services	484.7		
Audit Services	503.2		
Field Administration	13,204.5		
Total for Ministry Administration		$ 24,338.2	
LAND MANAGEMENT PROGRAM			
Water Control and Engineering	$11,196.8		
Forest Protection	16,155.7		
Air Service	4,645.0		
Extra Fire Fighting	1,549.1		
Resource Access	4,387.7		
Land and Water Classification	7,789.2		
Land, Water and Mineral Title Administration	11,869.4		
Conservation Authorities	34,649.9		
Total for Land Management		92,242.8	
OUTDOOR RECREATION PROGRAM			
Recreational Areas	$28,522.8		
Fish and Wildlife	23,450.8		
St. Lawrence Parks Commission	7,648.0		
Wasaga Park Community Project	1,164.8		
Total for Outdoor Recreation			60,786.4
RESOURCE PRODUCTS PROGRAM			
Mineral Management	$ 9,164.9		
Forest Management	49,687.9		
Algonquin Forestry Authority. The Algonquin Forestry Authority Act	20.0		
Total for Resource Products			58,872.8
RESOURCE EXPERIENCE PROGRAM			
Junior Rangers	$ 4,421.3		
Youth Corps (Experience '78)	4,751.6		
Leslie M. Frost Natural Resources Centre	975.1		
Total for Resources Experience			10,148.0
TOTAL BUDGETARY EXPENDITURE			$246,388.2

Personnel Services Branch

Senior Administration Staff

March 31, 1979

Deputy Minister

Dr. J. K. Reynolds

Assistant Deputy Ministers

W. T. Foster, Southern Ontario
J. W. Keenan, (Acting) Policy and Priorities
L. Ringham, Northern Ontario

Regional Directors

R. A. Baxter, North Central (Thunder Bay)
W. G. Cleaveley, Northeastern (Sudbury)
R. M. Dixon, Central (Richmond Hill)
T. W. Hueston, Eastern (Kemptville)
K. K. Irizawa, Algonquin (Huntsville)
G. A. McCormack, Northwestern (Kenora)
J. R. Oatway, Northern (Cochrane)
N. D. Patrick, Southwestern (London)

Executive Co-ordinators

D. P. Drysdale, Program Management Evaluation
L. H. Eckel, Outdoor Recreation Group
G. A. Jewett, Mineral Resources Group
J. W. Keenan, Lands and Waters Group
A. H. Peacock, Forest Resources Group
G. D. Spry, Finance and Administration Group

Directors

R. J. Burgar, Conservation Authorities Branch
R. G. Code, Surveys and Mapping Branch
G. P. Elliott, Management Improvement
H. B. Farrant, Human Resources Planning
W. K. Fullerton, Forest Resources Branch
A. C. Goddard, Financial Services Branch
G. A. Hamilton, The Leslie M. Frost Natural Resources Centre
A. Jackel, (Acting) Personnel Services Branch
K. H. Loftus, Fisheries Branch
E. Markus, Timber Sales Branch
Dr. T. P. Mohide, Mineral Resources Branch
F. Moritsugu, Information Services Branch
S. B. Panting, Engineering Services Branch
Dr. E. G. Pye, Ontario Geological Survey
J. A. Queen, Administrative Services Branch
R. A. Riley, Land Use Co-ordination Branch
J. D. Roseborough, Wildlife Branch
W. L. Sleeman, Aviation and Fire Management Centre (Sault Ste. Marie)
(Vacant) Policy Co-ordination Secretariat
(Vacant) Lands Administration Branch
R. J. Vrancart, Provincial Parks Branch
A. A. Ward, Internal Audit Services Branch
E. G. Wilson, Office of Indian Resource Policy

Head

Dr. D. Burger, Ontario Forest Research Centre (Maple)

District Managers

W. D. Adlam, Ottawa District
E. N. Arbuckle, Espanola District
J. R. Bailey, Lanark District
R. G. Bailey, Napanee District
M. P. Barker, Atikokan District
L. L. Bronson, Pembroke District
W. R. Catton, Cambridge District
J. K. Cleaveley, Geraldton District
D. J. D'Agostini, Fort Frances District
P. R. Davidson, Aylmer District
J. E. Dickenson, Niagara District
C. Dionne, Gogama District
T. E. Dodds, Ignace District
I. B. Earl, Maple District
R. Elliott, Chapleau District
C. E. Emblin, Hearst District
H. P. Endress, Dryden District
E. W. Everley, Red Lake District
D. R. Fortner, Chatham District
J. F. Goodman, Sioux Lookout District
O. Goodman, Bancroft District
C. R. Gray, Lindsay District
L. J. Haas, Terrace Bay District
D. L. Hagar, Blind River District
J. E. Hamilton, Thunder Bay District
G. O. Koistinen, Nipigon District
J. H. Lever, Bracebridge District
R. G. Lightheart, Kapuskasing District
W. J. Lovering, Parry Sound District
W. D. Mansell, Huronia District
R. B. McGee, Simcoe District
D. B. McGregor, Kenora District
D. E. McHale, Sudbury District
J. G. Minor, Kirkland Lake District
J. R. Morin, Cornwall District
D. J. O'Grady, White River District
A. F. Papineau, Timmins District
N. Richards, Wingham District
E. Rogers, North Bay District
J. E. Rumney, Temagami District
J. H. Sellers, Sault Ste. Marie District
J. A. Simpson, Algonquin Park District
A. J. Stewart, Moosonee District
W. J. Straight, Wawa District
R. W. Tippett, Owen Sound District
R. H. Trotter, Brockville District
D. D. White, Minden District
G. A. Wright, Cochrane District
W. Vonk, Tweed District

Total Staff

March 31, 1979	Regular	Probationary	Unclassified	Total
Main Office	823	107	265	1,195
Field Offices	3,096	349	1,433	4,878
Total	3,919	456	1,698	6.073

Total Complement of Positions	4,586
Vacancies in Complement	213
Regular and Probationary Staff	4,373
New Employees Hired 1978/79	862

Professional Staff

March 31, 1979	
Biologists	150
Economists	9
Engineers	9
Foresters	287
Geologists	57
Park Planners	29
Scientists	48
Miscellaneous	50
Total	639
Resource technicians	1,663
Licensed scalers	1,164

Staff Turnover*

March 31, 1979	
Deceased	8
Transferred	32
Released	4
Resigned	146
Dismissed	0
Retired	97
Total	287

*The ratio of separations to the total of regular and probationary staff at March 31, 1979, was 7.4 per cent.

Safety

The staff of Safety Programme Development Section were involved with Ministry employee safety programmes; the safety of the general public in provincial parks and other Crown lands; training employees in first aid; vehicle driver improvement programmes; fire safety procedures; water safety; supervisory training in accident control; job safety planning; and inspection of work areas and equipment vehicles.

The following numbers of employees were trained as noted:

Accident Investigations	69
First Aid Courses	484
Defensive Driving Courses	195
Junior Ranger Safety Training Courses	14
Axe and Chainsaw Courses	26
Junior Ranger Foreman Courses	6
Snowmobile Training Courses	6
Inspections (Buildings, Camps, Nurseries, etc.)	331

Information Services Branch

Exhibits

The Ministry's principal exhibit during the year was the miniature "Ontario Provincial Park" created indoors at the Canadian National Sportsmen's Show in Toronto March 16 to 25.

The indoor replica of a provincial park, complete with forest and recreation areas, promoted the opportunities offered by the 128-park provincial system. Judging by the positive reaction of more than 178,000 visitors, it was a most successful exhibit.

The Branch prepared and co-ordinated, or supported, three other major Ministry exhibits at the Central Canada Exhibition, the Lakehead Exhibition and the International Plowing Match. The Branch also assisted in exhibits and displays for 46 smaller fairs and events where the Ministry presentation was managed by field offices or program branches.

News and Features

Newsworthy material from main office and field offices was co-ordinated by the Branch and distributed to the news media. Major news releases issued totaled 96 while other releases announced grants for conservation authority projects and park assistance programs.

During serious forest fire periods, flooding seasons and other emergency situations, the Branch assisted in setting up information networks as well as delivering up-to-the-minute information as required to principal news outlets.

Outdoors Offbeat, a news feature service with photographs, was mailed periodically to news outlets, outdoor writers and selected periodicals, a total of 1,300 addresses.

Ontario Outdoors, a public service radio series, was delivered every two months to 61 Ontario stations. Each 27-minute program featured Ministry staff telling about MNR programs and services.

Staff support and guest personnel were provided for TV and radio programs throughout the Province.

Material was mailed to 49,783 persons who asked for information on Crown land, natural resources or outdoor recreation.

Publications

During the year the Ministry released 45 books or large booklets, 18 smaller booklets and six large folders, nearly all sold to the general public on a cost-recoverable basis. The publishing list included scientific papers, technical reports and numerous leaflets or small folders on Ministry services and installations.

French-language publications included the annual summaries of fishing and hunting regulations, the annual information booklet for the Junior Ranger program, hunter safety examinations and notices, and a number of leaflets and small booklets on provincial parks and district services.

New publications of main office branches and field offices included the following:

Abandoned Pits and Quarries in Ontario, Ontario Geological Survey Miscellaneous Paper 79 ($2)
An Annotated Bibliography of the Effects of Roads on Aquatic Systems, Vol II ($2.50)
Comment Obtenir un Permis de Chasse de L'Ontario
Common Diseases and Parasites of Furbearing Mammals in Ontario (50¢)
Crown Land Recreation Study, Phase 2: Future Trends and Management Options, March, 1979
Cull Survey Tables (metric)
Les Dangers que Menacent les Propriétés Riveraines (Programme Canada-Ontario)
The Effects of Highway Construction on Galt Creek, Ontario, Volumes 1 and 2 ($2.50 each)
Financing of the Junior Mining Company in Ontario ($10)
Flooding! It Can Happen To You
Forest Inventory Procedures for the Province of Ontario ($1)
Forest Nursery Soil Management and Related Practices (revised, metric) ($10)
Forest Research 77 ($1.50 to public)
Geology of the Twopeak Lake Area, District of Cochrane, Ontario Geological Survey Report 184 ($2.50)
Geoscience Research Grant Program, March, 1979
Geoscience Research Grant Program, Summary of Research 1978-9, Ontario geological Survey Miscellaneous Paper 87 ($2)
Hawk Cliff Wildlife Agreement Area
Investment Effects on the Mineral Industry of Tax and Environmental Policy Changes: A Simulation Model, Background Policy Paper No. 5 ($5)
Kakabeka Falls Provincial Park Master Plan ($2)
Lake of the Wood General Land Use Plan ($3)
Land Resources for Education Outdoors (Published jointly with Ministry of Education)
MacGregor Point Provincial Park Master Plan ($2)
Metric Conversion and Gas and Oil Exploration in Ontario
Nesting Ecology of Canada Geese in the Hudson Bay Lowlands of Ontario, Fish and Wildlife Research Report No. 98 ($3.50)
Next Time You're Shopping, Pick Up a Tree
Not Ours to Control
Oil and Gas Exploration Drilling and Production Summary, 1976, Paper 77-1 ($7.50)
The Ontario Geological Survey, Miscellaneous Paper 81 (50¢)
Ontario Mineral Review, 1976-1977 ($2)
Ontario Provincial Parks Planning and Management Policies
Proceedings of Ontario Conference on Forest Regeneration
Proceedings of the 35th Annual Conference of the Provincial Ministers of Mines (bilingual)
Provincial Park Facility Inventory
Provincial Park Training Leaflets
The Role of Smaller Enterprises in the Canadian Mineral Industry with a Focus on Ontario ($10)
Season of the Black Bear
Shore Property Hazards (Published jointly with Fisheries and Environment Canada)
Statistical Report on Mineral Industry of Ontario, 1974 ($2)
A Study of Pit and Quarry Rehabilitation in Southern Ontario, Ontario Geological Survey Miscellaneous Paper 83 ($2)
Temagami Canoe Routes ($2)
Tweed District Crown Lands
Wildflowers of Algonquin Provincial Park ($1)
Women's Affirmative Action Program

A-V and Films

Polar Bear Provincial Park, a 14-minute film produced by Information Services for Provincial Parks Branch, was chosen by the Outdoor Writers Association of America as the best conservation film released in North America in 1978. The film had earlier won a citation for creative excellence at the annual International Industrial Film Festival in Chicago. It

was made for the public participation process of the master plan review.

MNR People, a 32-minute color film, was produced by the Branch to show Ministry employees at work and demonstrate their job functions. It is used for the instruction of Junior Rangers and new employees and shown to interested groups.

The Branch also produced an 18-minute film on the Ministry's popular exhibit in the Canadian National Sportsmen's Show.

A newsfilm release on the new leg-snare trap was used by three Canadian networks and all Ontario TV stations.

The motion picture library loaned 1,200 films to Ministry offices and outside groups during the year and answered more than 200 requests for the loan of projection and audio-visual equipment. It acquired 22 films, bringing the catalogue to 345.

The Branch responded to 123 requests for photography services relating to Ministry publications and research projects. The darkroom produced more than 4,000 photo prints.

Internal Audit Services Branch

The objective of the Branch is to independently review operations of the Ministry, and some of its agencies, and provide management with analysis, appraisals and recommendations concerning the activities reviewed. Audits are performed on the following:

All Ministry of Natural Resources offices
Thirty-eight Conservation Authorities
The St. Clair Parkway Commission
The St. Lawrence Parks Commission.

Legal Services Branch

During the fiscal year commencing April 1, 1978, and ending March 31, 1979, Legal Services Branch prepared and processed amendments to The Crown Timber Act (by Statutes of Ontario 1978, Chapter 51); The Game and Fish Act (by Statutes of Ontario 1978, Chapter 52); The Ministry of Natural Resources Act, 1972 (by Statutes of Ontario 1978, Chapter 92); The Mining Tax Act, 1972 (by Statutes of Ontario 1978, Chapter 82); and The Niagara Parks Act (by Statutes of Ontario 1978, Chapter 91).

Metric conversion of thirteen (13) statutes administered by the Ministry was effected through Part VIII of The Metric Conversion Statute Law Amendment Act, 1978 (Statutes of Ontario 1978, Chapter 87). The statutes affected are The Beach Protection Act, The Canada Company's Lands Act, 1922, The Conservation Authorities Act, The Forest Fires Prevention Act, The Lakes and Rivers Improvement Act, The Niagara Parks Act, The Petroleum Resources Act, 1971, The Pits and Quarries Control Act, 1971, The Public Lands Act, The St. Clair Parkway Commission Act, The Surveys Act, The Wilderness Areas Act and The Woodlands Improvement Act. All but the amendments to The Pits and Quarries Control Act, 1971, were proclaimed to be in force as of April 1, 1979.

During the fiscal year, sixty-six (66) regulations and four hundred and eighty-three (483) Orders-in-Council, made under the authority of Statutes administered by the Ministry, were prepared and processed through the Branch.

Four hundred and twenty-one (421) agreements were processed through the Branch.

Affirmative Action Program

The Affirmative Action Program was begun in 1974-5 with the goal of ensuring equal opportunity for women in the Ontario Public Service. Because of the slow rate of improvement in women's occupational status, in 1977-8 a more concrete focus was given to the program so that, while the goal remains the same, the present objective is to increase the number of women in all positions and levels where in the past few or no women were employed.

The Women's Co-ordinator is responsible for providing advice and technical assistance to managers at all levels, encouraging women to take advantage of new opportunities, co-ordinating the Ministry's Affirmative Action Plan, and monitoring and evaluating its implementation.

Various methods were used to increase understanding of the objectives and methods of the program, with greater emphasis than previously on statistics showing the slow rate of progress. Speeches by the Women's Co-ordinator to meetings of male and female staff were continued and written reports on various aspects of the program were widely distributed within the Ministry. The first two issues of a newsletter, to be produced by each Group and Region in turn, were published and distributed.

Monitoring and improvement of staffing processes continued. More Selection Boards had members of both sexes, and increasingly the female member had experience in the field concerned. A system was instituted whereby, after each competition, managers reported to the Women's Co-ordinator the criteria on which the applicants had been judged. A course to instruct managers in the best selection procedures was arranged by Personnel Branch; three sessions were held, with six projected for 1979-80.

To improve program planning, a more formal system was designed and put into operation to collect information on hiring, retention, promotion, training, job rotation and job enrichment at the District and Branch level. As well, data were collected on the numbers of females graduating from colleges and universities in resources management fields. Research on former female participants in the Junior Ranger Program showed that this experience was perceived by them to have had a positive effect on their interest in non-traditional careers.

Efforts continued to increase the numbers of women enrolling in resources management courses, and to assist them to obtain work experience. There was an increase in female Junior Rangers, to 788 from 688 in the previous year. Female summer students continued to be hired in all disciplines, and female graduates made up a fair proportion of seasonal unclassified staff.

Increasing upward mobility of present female staff is a priority of the program. The number of special courses increased; two Women into Management courses were held, and six in Career Planning and Assertiveness Training. Individual Training and Development plans were made for female employees. Job rotations and other job enrichment activities increased, as did counselling of individual women, particularly on job search techniques. An inventory of female staff with potential for more senior positions was begun.

The Ministry has a network of elected Affirmative Action representatives whose primary role is to encourage female employees to take part in opportunities available. Two three-day conferences of these representatives were held, for training, information exchange, and advice on program activities. These elected women form Affirmative Action Committees at the Group and Regional level; improvements in the status of these committees resulted in an increase in the number of women participating in program activities.

As in previous years, a slight gain was made in the proportion of women in administrative positions.

For the first time, there was a substantial increase in female professionals and technicians in positions requiring resources management training, with twice as many such women professionals (49, compared to 19 in the previous year) and more than three times as many such women technicians (15, compared to 4). Although women still held less than seven per cent of these professional positions, and less than one per cent of the technical, it is expected that the Ministry's efforts to increase the pool of women qualified for resources management positions will produce further improvements next year.

Mining and Lands Commissioner

The Mining and Lands Commissioner exercises judicial, quasi-judicial and administrative powers and duties under The Beach Protection Act, The Mining Act and The Mining Tax Act, 1972, and regulations made under The Ministry of Natural Resources Act, 1972, assigning powers and duties of the Minister to the Commissioner.

Judgments, orders and reports issued by the tribunal during the fiscal year were as follows:

Orders extending time for performing work or applying and paying for leases	858
Orders authorizing special renewal of licences	63
Miscellaneous judgements, orders and reports	73
Total number of orders	994

The potential revenue from filing extensions orders is as follows:

8,147 claims	Prior to default	$40,735.00
871 claims	Relief from forfeiture	8,710.00
		49,445.00

Hearings under The Mining Act were held at Kirkland Lake, Sault Ste. Marie, Timmins and Toronto. Three appeals were heard at Toronto under The Mining Tax Act, 1972. Appeals under The Conservation Authorities Act were heard at Brampton, Brantford, Kitchener, Orangeville, Ottawa and Toronto. One inquiry under The Lakes and Rivers Improvement Act was held at Cambridge.

Statutory Authority	Settled or Abandoned	Hearings Held
The Conservation Authorities Act	8	11
The Lakes and Rivers Improvement Act	—	1
The Mining Act	—	9
The Mining Tax Act, 1972	1	3
Total	9	24

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Ontario

Minister of Natural Resources

Annual Report
1980

Annual Report

of the Minister of Natural Resources
of the Province of Ontario
for the fiscal year ending March 31, 1980
$2.00

TO HIS HONOUR
The Lieutenant-Governor
of the Province of Ontario

MAY IT PLEASE YOUR HONOUR
The undersigned begs respectfully to present to your Honour the Annual Report of the Ministry of Natural Resources for the fiscal year beginning April 1, 1979, and ending March 31, 1980.

James A.C. Auld

JAMES A.C. AULD
Minister

Ontario

Ministry of
Natural
Resources

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**Related information of interest is reported in Statistics, 1980.*

Highlights

- The total value of mineral production in Ontario in 1979 was $3.27 billion.
- Payments under the Mineral Exploration Assistance Program were $647,514, bringing the total government expenditure since 1971 to $3,630,826.
- Grants of $475,567 to nine universities were approved under the Ontario Geoscience Research Grant Program.
- The Ontario Geological Survey sent out 34 field survey crews as part of the regular on-going program, and another 22 field survey crews on behalf of other agencies, to map and record geological information.
- The first 22 of a projected 137 Northern Ontario Engineering Geology Terrain Study maps are now available for use.
- The first Aggregate Resources Inventory Paper was released during the year. The aggregate inventories are being prepared to cover all townships designated under The Pits and Quarries Control Act.
- Tax revenues collected during the year under The Mining Tax Act amounted to $98,900,000, an increase of 137 per cent on the year.
- "The Future of Nickel and the Law of the Sea" was issued as Policy Background Paper No. 10 and widely distributed in English and French. It highlights the Ministry's contribution to the United Nations Law of the Sea conference.
- The harvest of wood on Crown land amounted to 1,796,000 m^3 (6,340,000 cunits), valued at $46.3 million at time of measurement.
- On Crown lands 240,448 ha (594,163 acres) received silvicultural treatment.
- Ontario's forests were planted with 69 million trees raised in Ministry nurseries.
- Agreements with private landowners under The Woodlands Improvement Act increased by 819 to 7,720, bringing 136,428 ha (336,979 acres) under agreement.
- Forests managed by agreements under The Forestry Act (mainly with municipalities and Conservation Authorities) increased by 274 ha (677 acres) to 109,446 ha (270,441 acres).
- In the continuous inventory of Ontario's forests, 45,325 km^2 (17,500 square miles) were photographed from the air. Sampling surveys of forest stands were made by field parties on 25,900 km^2 (10,000 square miles).
- In provincial parks 1,353,733 persons camped a total of 3,259,752 nights in 1979.
- The Ministry managed 24,140 km (15,000 miles) of canoe routes in provincial parks and on other Crown lands.
- Under the winter trails recreation program, $500,000 was made available in grants to trail clubs and Conservation Authorities for the grooming and maintenance of 14,100 km (8,813 miles) of snowmobile trails and 1,540 km (963 miles) of cross-country ski trails. The Ministry maintained 1,540 km (963 miles) of snowmobile trails and 620 km (388 miles) of cross-country ski trails on Crown land.
- About 1,400 water access points with parking areas and boat ramps were maintained on Crown land.
- Canada geese that breed wild in southern Ontario now number 30,000 birds, the result of the program begun in 1968.
- Ontario's 14,983 trappers sold 929,196 wild fur pelts for $20.2 million.
- Ontario residents bought 551,515 hunting licences in 1979 and non-residents bought 31,914.
- Certified instructors trained 35,080 new hunters in 1979, bringing to 525,878 the number trained since 1957.
- The public attended 72 open-house meetings across the Province and strongly supported a management plan to increase the size of the moose herd which numbers 80,000 animals.
- A shotgun season for deer, with controlled hunter numbers, was held for the first time in agricultural southern Ontario.
- The Strategic Plan for Ontario Fisheries (SPOF) was begun and more than $500,000 was expended on the rehabilitation of fish habitat.
- The back-cross strain of hybrid splake provided spectacular fishing in southern Georgian Bay.
- In the inventory begun in 1969, 10,000 lakes and 750 streams have been surveyed in Ontario for an initial estimate of fish production.
- Ontario waters were stocked with six million fish raised in Ministry hatcheries; 13.5 million eggs were also planted.
- The commercial fish harvest declined slightly but its value rose by $4 million to $26 million. Lake Erie accounted for 70 per cent of the catch and its value.
- Grants to conservation authorities under The Conservation Authorities Act amounted to $30,158,072.
- The Ministry maintained 8,919 km (5,542 miles) of resource access roads.
- A total of 2,480 ha (6,130 acres) of private land was acquired for government purposes, bringing the acquisition since 1962 to 257,481 ha (636,250 acres).
- Sixty-six regulations and 437 Orders-in-Council were prepared and processed.

Goal

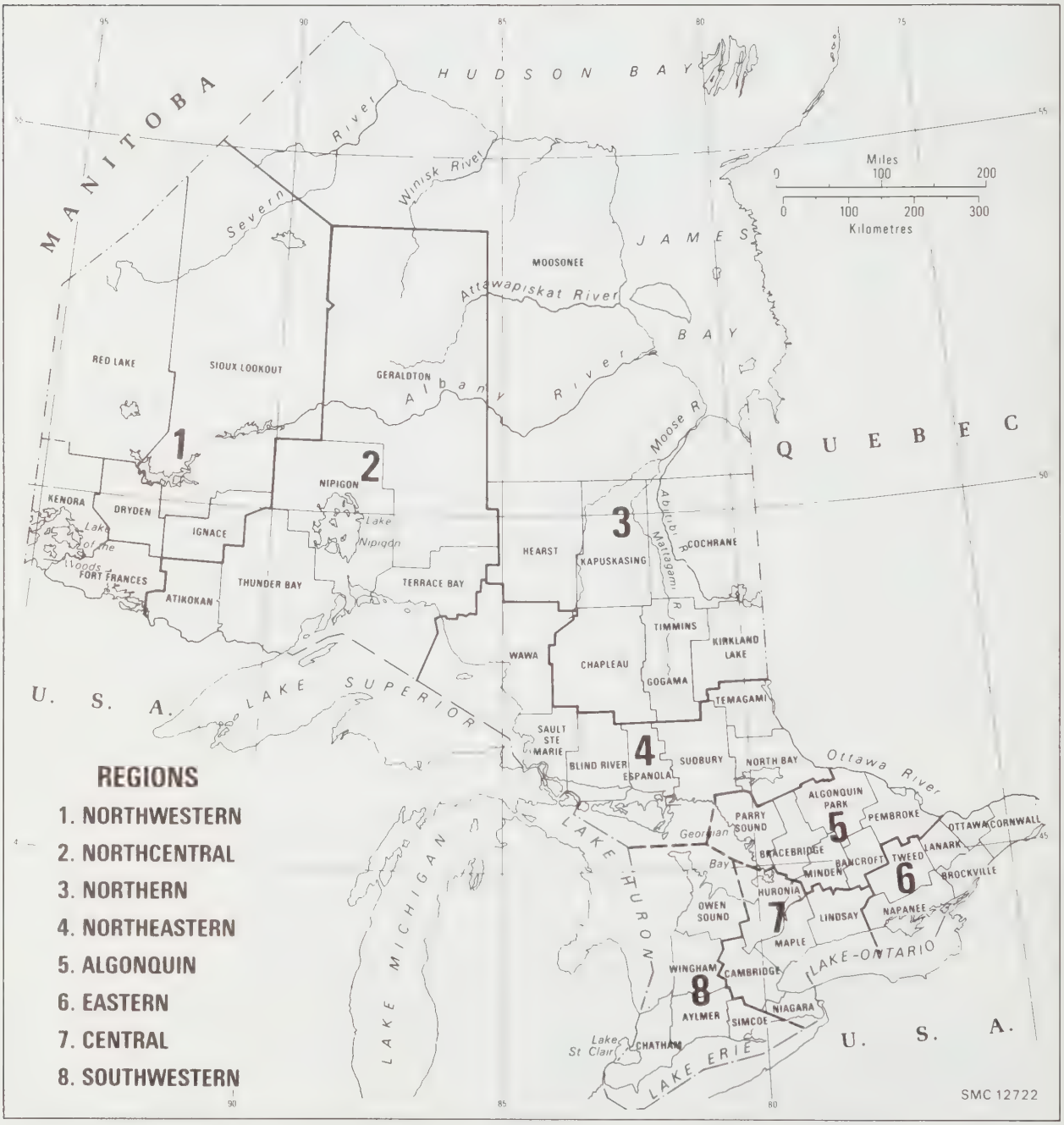
The goal of the Ministry of Natural Resources is defined as follows:

"To provide from Crown lands and waters, and to encourage on private lands and waters, a continuing combination of resource development, outdoor recreation and quality environment most consistent with the social and economic well-being of the people of Ontario."

Ministry Operational Organization

The Ministry of Natural Resources is organized functionally and geographically so that the authority for operational decision-making is placed as close as possible to the program delivery level.

While the field organization of the Ministry directly provides services to the public, Main Office is responsible for monitoring, co-ordination, policy development, operational review and the comptrollership function.



Field Organization

The Ministry of Natural Resources is organized functionally and geographically so that the authority for operational decision-making is placed as close as posible to the program delivery level. For administrative purposes, Ontario is divided into eight regions and 48 districts. The district managers, regional directors and field assistant deputy ministers are the line managers responsible for implementing the Land Management, Outdoor Recreation and Resources Products Programs of the Ministry.

Each regional office is organized into functional units headed by specialists responsible for providing advice and support to the districts. In some instances — such as conservation authorities, mineral management, engineering and administrative services — the regional office is also the delivery point for Ministry programs.

The primary role of the regional director and his staff is to direct and co-ordinate the work of the districts by establishing regional priorities and allocating appropriate resources to meet these; by establishing program standards and subsequently auditing to ensure the standards are met; by developing training programs and ensuring they are implemented; and by providing specialized advice and support services. In addition, the Regional Director and his staff recommend to main office annual work plans and identify areas where policy is required or needs to be modified.

Districts are the basic line units of the Ministry organization where the management and use of natural resources takes place with consideration of local requirements. District managers are responsible for the preparation of local land use plans and for the integration of individual resource plans that are consistent with the land use plan. Each district manager is responsible to the appropriate regional director for all activities assigned to the district.

The four northern regional directors and the Aviation and Fire Management Centre director report to a field assistant deputy minister at Thunder Bay; the four southern to one located at Toronto. The two field assistant deputy ministers are assigned line responsibility, authority and accountability for program management. In addition, they reflect field positions through membership on the Policy and Priority Committee.

Policy Co-ordination Secretariat

The Policy Co-ordination Secretariat:

— Provides co-ordination, integration and communication services with regard to policy planning to the main office groups and to the regions to assist them in achieving the Ministry's objectives;

— Provides staff support to the Policy and Priorities Committee, the Minister's Policy Committee and other senior-level committees as required;

— Supports the production of new policy initiatives in conjunction with the relevant main office and regional staff;

— Provides support, advice and information to the main office groups and regions in assessing long-range policy needs and directions in the context of the Ministry's mandate and government objectives;

— Ensures the widest and earliest possible multi-functional consideration of policy proposals being developed within the Ministry;

— Co-ordinates the process for development of new legislation;

— Ensures the necessary liaison with Cabinet and its committees, and with other Ministries; and

— Undertakes special policy co-ordination assignments at the request of the Chairman of Policy and Priorities Committee.

Forest Resources Branch

The objective of the Branch is to produce optimum and continuous industrial, social and environmental benefits from the public forests and to encourage and assess similar production on private lands in Ontario.

Ontario Forest Research Centre

The Ontario Forest Research Centre continued to generate knowledge and develop techniques and materials in the biological and ecological fields for use in effective forest management. This is undertaken by the Centre's own scientists, through contracts with universities and the private sector, and through co-operative programs with the Canadian Forestry Service and various institutes.

Active participation by field managers is sought to assist in the identification and description of problems and subjects which may require research effort. Suitable arrangements for such research-management co-operation are being developed.

Studies contributing to the successful establishment, through planting, of conifer species on cutover or other lands are a major concern. These range from the improvement of seed supplies, through effects of nursery practices on the physical and physiological quality of stock, to the understanding and evaluation of growth and survival after outplanting. The research phases of using pregerminated black spruce seed raised in peat cubes in greenhouse conditions have been completed and pilot-scale production studies have been initiated.

Increasingly, genetically improved material is being used for planting stock. The development of new hybrids and testing of previous hybrids in both conifer and hardwood material continues. In particular, the development of poplar hybrids suitable for northern Ontario is being tackled. Emphasis is also being placed on documenting the genetic variation in native poplar species and establishing gene-pool collections.

Irregularity in production of pollen and seed cones has impeded the spruce breeding programs and lengthened the time interval of the advanced generation breeding. Research has therefore been initiated into promoting regular and ample cone production in spruce seed orchards, and to increase the amount of viable seeds in the cones.

Analysis of the structure and development of balsam fir stands in the natural spruce-fir-aspen forest in northern Ontario is a new program to obtain information that can be used to develop suitable management techniques for this "problem" species. Similar stand dynamics studies in the tolerant hardwood forest of the southern part of the province have led to improvements in the quality of sugar maple and in establishment of yellow birch. This has been accomplished through ongoing research-management interchange of information.

The productivity of forest sites continues to be of concern as utilization of species and the extent and intensity of management practices change. Thus productivity and nutrient cycling in spruce ecosystems has been a subject of long-term study, as has the recording of growth response to management treatments on permanent sample plots in hardwood stands and conifer plantations. Possible nutrient loss under short rotation systems in poplar management is the focus of new studies. Next year, preliminary work will be undertaken on facets of acid precipitation in relation to growth effects.

Growing of trees for the traditional lumber and pulp markets is not the only aspect being considered. For example, the potential of poplar as a source of fuel, and of proteins for human and animal food, is being investigated through contract studies.

These and other studies are outlined briefly in Forest Research 79, an annual review of many of the activities of the Ontario Forest Research Centre.

Silviculture

Tree Seed Program

In January, 1979, a second tree seed plant started operation at the Wabigoon nursery near Dryden to extract seed from jack pine cones for the Northwestern Region. A total of 6,633 hl of cones were extracted in the 1979-80 fiscal year. This second plant complements the Ontario Tree Seed Plant at Angus.

The Angus plant extracted a total of 18,434 hl of cones for all species, including 15,095 hl of jack pine, during the fiscal year.

As of June 1, 1979, the inventory of forest tree seed in storage at Angus was 5,705,000,000 viable seeds of 79 species, weighing 34,700 kg and valued at $2,896,000.

Seed Collection

The year 1979 was a good crop year for many of the species used in the reforestation program.

1979 Seed Crop by Species	Hectolitres Collected
Jack pine	15,023
White pine	1,400
Red pine	180
Black spruce	1,240
White spruce	134
Black walnut	1,060
Basswood	82
Other species	370
	Total 19,489
	(53,595 bushels)

Seed Distribution

A total of 1,593,215,000 viable seeds was used to carry out the regeneration projects in the Province during 1979. The seed was used in four main programs.

Direct Seeding	1,164,407,000
Nursery stock production	397,515,000
Container stock production	24,531,000
Research and Miscellaneous	6,763,000
Total viable seed	1,593,216,000

Planting Stock Distribution

Bare Root Nursery Stock	
Conifers	57,635,506
Hardwoods	3,817,955
Total	61,453,461
Container Stock	7,944,817
Grand Total	69,398,278
Production Targets seeded	73,630,000

Tree Improvement

In the past year, activity in tree improvement has accelerated throughout the Province. To date, detailed implementation schedules have been prepared for black spruce, jack and white pine outlining the requirements necessary to produce sufficient quantities of improved seed to meet the Forest Production Policy targets.

A third grafting centre was started in the Northwestern Region and it is anticipated that additional centres will be set up throughout the Province to increase grafting productivity — thus reducing the time required to establish the clonal orchards.

The first progeny trials, using controlled pollinated seed from the Northern Region clonal orchards, were established in both black and white spruce. Much of this material is being

Classification of Cutover Forest Land, 1979-1980

Areas in Hectares (Acres)

Cutting Method	Available For Regeneration Treatment			Natural Regeneration Without Treatment			Not Available For Regeneration Treatment			Total		
	Crown	Patent	Total	Crown	Patent	Total	Crown	Patent	Total	Crown	Patent	Total
Clear out	75,694 (187,044)	5,687 (14,053)	81,381 (201,097)	33,201 (82,041)	13,827 (34,167)	47,028 (116,208)	30,698 (75,856)	1,040 (2,569)	31,738 (78,425)	139,593 (344,941)	20,554 (50,789)	160,147 (395,730)
Selection Cut	— —	— —	— —	11,120 (27,479)	10,817 (26,729)	21,937 (54,208)	— —	— —	— —	11,120 (27,479)	10,817 (26,729)	21,937 (54,208)
Partial Cut	— —	— —	— —	— —	— —	— —	25,757 (63,648)	10,737 (26,531)	36,494 (90,179)	25,757 (63,648)	10,737 (26,531)	36,494 (90,179)
TOTAL	75,694 (187,044)	5,687 (14,053)	81,381 (201,097)	44,321 (109,520)	24,644 (60,896)	68,965 (170,416)	56,455 (139,504)	11,777 (29,100)	68,232 (168,604)	176,470 (436,068)	42,108 (104,049)	218,578 (540,117)

Summary of Silvicultural Operations, 1979-80

Areas in Hectares (Acres)

REGENERATION	Crown Land	Agreement Forests	W.I.A.	Sub-Total	Other Patent Lands	Total
Planting Nursery Stock	19,830 (48,998)	445 (1,100)	4,414 (10,909)	24,689 (61,007)	2,004 (4,953)	26,693 (65,960)
Planting Container Stock	3,860 (9,539)	200 (495)	77 (190)	4,137 (10,224)	— (—)	4,137 (10,224)
Seeding	24,251 (59,926)	— (—)	— (—)	24,251 (59,926)	— (—)	24,251 (59,926)
Scarification	2,392 (5,911)	4 (9)	— (—)	2,396 (5,920)	— (—)	2,396 (5,920)
Strip Cutting	2,058 (5,086)	— (—)	— (—)	2,058 (5,086)	— (—)	2,058 (5,086)
Seed Tree Cutting	7,339 (18,135)	7 (17)	— (—)	7,346 (18,152)	— (—)	7,346 (18,152)
Shelterwood Cutting	9,867 (24,383)	18 (44)	280 (691)	10,165 (25,118)	239 (591)	10,404 (25,709)
Clear Cutting	2,266 (5,598)	107 (266)	8 (20)	2,381 (5,884)	243 (600)	2,624 (6,484)
Total	71,863 (177,576)	781 (1,931)	4,779 (11,810)	77,423 (191,317)	2,486 (6,144)	79,909 (197,461)
RE-TREATMENT	2,072 (5,120)	38 (93)	1,721 (4,254)	3,831 (9,467)	— (—)	3,831 (9,467)
TENDING						
Hand Cleaning	5,326 (13,161)	598 (1,477)	704 (1,740)	6,628 (16,378)	38 (93)	6,666 (16,471)
Herbicide Spraying	13,156 (32,509)	378 (935)	1,402 (3,464)	14,936 (36,908)	2,012 (4,973)	16,948 (41,881)
Thinning Improvement Cuts	8,511 (21,032)	1,864 (4,605)	2,856 (7,058)	13,231 (32,695)	386 (953)	13,617 (33,648)
Pruning	695 (1,717)	583 (1,441)	353 (872)	1,631 (4,030)	1 (3)	1,632 (4,033)
Fertilization Drainage	172 (424)	144 (357)	50 (124)	366 (905)	— (—)	366 (905)
Total	27,860 (68,843)	3,567 (8,815)	5,365 (13,258)	36,792 (90,916)	2,437 (6,022)	39,229 (96,938)
SITE PREPARATION	49,061 (121,233)	555 (1,372)	1,370 (3,384)	50,986 (125,989)	8 (20)	50,994 (126,009)
MARKING	50,607 (125,052)	4,024 (9,944)	4,525 (11,182)	59,156 (146,178)	7,329 (18,110)	66,485 (164,288)
TOTAL AREA TREATED	201,463 (497,824)	8,965 (22,155)	17,760 (43,888)	228,188 (563,867)	12,260 (30,296)	240,448 (594,163)

reproduced en masse through a unique vegetative propagation program by rooting cuttings taken from the juvenile seedlings.

More than 3,000 black spruce trees were selected in the Northwestern Region. Cones were collected and the seed was germinated for subsequent establishment of seedling seed orchards and progeny trials. A similar program for jack pine is under way in the Northeastern Region. Improvement programs are also under way for several hardwood species.

Tree Seed Areas	Black spruce	White spruce	White pine	Jack pine	Other species	TOTAL
Seed collection area in hectares (acres)	1,060 (2,620)	279 (690)	101 (250)	8,192 (20,235)	577 (1,427)	10,209 (25,222)
Seed production area in hectares (acres)	77 (191)	178 (440)	14 (33)	959 (2,368)	102 (252)	1,330 (3,284)
Seed orchard area in hectares (acres)	15 (37)	19 (44)	12 (29)	— —	20 (49)	66 (159)

Advisory Services

Private Lands

The Woodlands Improvement Act	Number of Agreements	Areas in Hectares (Acres)
New Agreements Activated 1979-80	819	9,940 (24,224)
Agreements in Effect to March 31, 1980	7,720	136,428 (336,979)
Number of Trees Planted	9,287,870	

Planting and woodland improvement operations are carried out on these private lands through agreements made under The Woodlands Improvement Act. The acreage treated is an integral part of forest production targets, and is of particular importance in Southern Ontario, where there is no significant area of Crown land.

Agreement Forests

Areas in Hectares (acres)

Agreement Holders	Added 1979-80	Released 1978-80	Total
1 Government of Canada			1,430 (3,532)
23 Conservation Authorities	162 (400)	569 (1,405)	37,908 (93,671)
19 Counties	348 (861)	9 (23)	59,222 (146,338)
10 Townships			1,226 (3,029)
6 Regional Municipalities	219 (540)		8,889 (21,965)
1 Company	123 (304)		771 (1,906)
60 Totals:	852 (2,105)	578 (1,428)	109,446 (270,441)

The agencies reported above have entered into forest management agreements with the Minister under The Forestry Act. The agencies' forests are an integral part of forest production targets, and are of particular importance in districts with no significant areas of Crown land.

Pest Control

The current outbreak of spruce budworm, which started in 1967, continued to expand and intensify. The outbreak now covers a gross forested area of 18 million hectares (45 million acres), an increase of three million hectares from 1978. The affected area includes almost all the Northern Region, as well as parts of the Northwestern, Northeastern, North Central and Algonquin Regions.

The Ministry conducted spraying programs to protect 8800 ha of mature forest in Geraldton District and 8000 ha in Kirkland Lake District. As well, high-value forests, mainly seed production areas, were sprayed in Chapleau, Gogama, Cochrane, Kapuskasing and Hearst Districts. In total, 20,013 ha were sprayed, using two chemical insecticides (Matacil and Orthene) and two bacterial insecticides (Thuricide and Novabac).

In 1979, the Ministry introduced a Spruce Budworm Spraying Policy which defines the criteria to be used for selective protection spraying of forests infested with spruce budworm, as well as restrictions on spraying to ensure that only small-scale programs will be conducted. As well, an information program on aerial spraying was conducted throughout northern Ontario to inform the public about the necessity for, and operational controls on, aerial spraying.

An additional 310 ha in Huronia District was treated with Orthene to protect oak forests from serious defoliation by the oak leaf shredder.

The maple decline problem in Parry Sound and Owen Sound Districts stabilized in 1979, with no new major areas of mortality appearing. Generally the condition of affected stands improved and it is expected that this will continue, especially since the serious forest tent caterpillar outbreak, associated with the decline, has subsided. Harvesting programs are under way to utilize the dead and dying trees for sawlogs, boltwood and firewood.

Intensive surveys by the Canadian Forestry Service and Ministry staff established that the European strain of Scleroderris canker is not yet present in Ontario. This disease has caused severe localized mortality of red pine plantations in Quebec and New York State. Co-operative federal-provincial programs are under way to prevent accidental introduction of the fungus into Ontario.

Other minor pest problems, eg. white pine weevil, pine and spruce sawflies, Fomes root disease, and rodents, required localized control throughout southern Ontario. In total, 22,441 ha (56,104 acres) were treated for insect, disease and rodent problems.

Timber Sales Branch

The major responsibilities of Timber Sales Branch are the rational management of Ontario's Crown land forests and the orderly disposition of the Province's Crown timber resource.

Authority under the statute and the regulations of The Crown Timber Act allows the Branch to effect these responsibilities. They are accomplished through the continuous inventory of the forest resource, the review and approval of all Crown, company, and Agreement forest management plans, the allocation of the Province's Crown timber resource to the forest industry by various statutory methods, the licensing of all forest industry or timber-using mills, the measurement or scaling of the harvested volume of Crown timber, and the continual monitoring of various factors affecting the performance of Ontario's forest industry.

Forest Resources Inventory

The Forest Resources Inventory Section supervised the tendering, quality checking, and indexing of 45,325 km² (17,500 square miles) of aerial photography for the Northern Region. All of this photography was carried out at the conventional scale of 1:15,840.

In addition to the aerial photography, sampling surveys of forest stands were conducted by field parties on almost 25,900 km² (10,000 square miles) in the Ministry's five districts of the Central Region. Aerial photograph interpretation, along with the identification of forest stand types in this region, were completed and checked.

Further, more than 20,720 km² (8,000 square miles) were covered by checking of interpretation work performed by contract outside the Ministry. These areas were under Crown timber licence to Great Lakes Paper Co. Ltd., Kimberly-Clark of Canada Ltd., Reed Ltd. and Kesagami Management Unit.

The forest stand inventory data are compiled for computer tabulation. More than 39,160 km² (15,119 square miles) of new forest inventory data were stored and report ledgers were produced. As well, the inventories of several Crown forest management units in Northeastern, Northern, North Central and Algonquin Regions were updated.

The photographic darkrooms associated with the aerial photograph work continued to serve the Ministry's main office and field offices as well as the public in general.

Management Plans

Forest management plans provide the broad framework within which forest operations are conducted. More detailed operating plans for shorter time periods identify the Crown timber stands to be harvested, regenerated and tended, and the roads and other improvements required in Crown, Company, and Agreement Forest management units. During the 1979-80 fiscal year, 259,000 ha (640,000 acres) of operational cruise data were processed by computer as supplied by the Ministry's forestry field staff.

Status of Management Plans March 31, 1980

Areas in Square Kilometers (Square Miles)	Forest Management Units					
	Crown		Company		Agreement	
	No.	Area	No.	Area	No.	Area
Approved Standard Plans	65	187,331 (72,329)	3	38,679 (14,877)	38	767 (296)
Plans Submitted For Approval	—	—	2	18,387 (7,099)	2	122 (47)
Plans Being Prepared and/or Revised	14	67,461 (26,047)	12	141,685 (54,705)	20	201 (78)
New Inventory Required	3	29,427 (11,362)	—	—	—	—
Inactive and/or Inaccessible Not Under Plans	6	50,199 (19,382)	—	—	—	—
Total	88	334,418 (129,120)	17	198,751 (76,681)	60	1,090 (421)

Timber Allocation

The Crown timber resource is allocated to the Province's forest industry in accordance with forest management principles and industrial requirements. Crown timber harvesting licences provide the Province's forest industry with the legislative authority to harvest Crown timber on an annual, allowable-harvest basis. The licences take several forms and are specific as to geographic area, tree species, volumes, stumpage payments and other charges, and various harvest control measures.

As of March 31, 1980, there were 510 active timber licences in the Province covering an area of 242,874 km² (93,774 square miles). During the course of the fiscal year, 167 new or renewed Order-in-Council timber licences were drafted, processed and issued, and an additional five tendered bid sales were conducted in conjunction with the respective field office.

Wood Measurement

Measurement, or scaling, determines the volume of timber harvested from Crown lands and Agreement Forests. It is the basis for the determination of public revenue and forest production statistics related to the forest industry.

Only licensed scalers, approved by the Ministry, may be employed to measure Crown timber for Ministry purposes. These scalers are required to attend standardized scaling refresher courses on a regular basis so that they are kept fully versed in the latest measuring techniques and to ensure that high, uniform scaling standards are maintained.

Wood measurement practices in Ontario are under constant review, and new methods are continually explored to ensure that scaling methods keep abreast of the latest harvesting techniques. Scaling in metric units is scheduled to be introduced April 1, 1981. At that time wood volumes will be measured and reported in cubic metres, stacked cubic metres or units of 100 kilograms.

During 1979-80, 6.34 million cunits (1.796 million m³) were measured as being harvested from Crown land in Ontario. This timber was valued at $46.3 million at the time of measurement.

Forest Industry Development

Forest Industry Development Section is concerned with the growth and development of the various components of the Province's forest industry. It monitors the demand for, and the supply of, timber products and the pattern of trade in these commodities, and it analyzes resource taxation and pricing. The Section assists in industrial expansion and regional development through industrial liaison, policy development and economic analyses.

Forest industry mills are licensed to operate with respect to Crown and private timber supplies in a specific locality. During 1979-80, 836 mills were licensed to process timber in the Province. They produced 3.99 million m³ (1.69 billion feet board measure) of lumber in response to the steady demand in the housing and remodeling industries. Pulp and paper product markets remained bouyant during 1979.

Progress was made during 1979 in the implementation of the forest management subsidiary agreement to the Canada-Ontario General Development Agreement with the Government of Canada, Department of Regional Economic Expansion. This agreement covers $71.5 million worth of projects over five years to be cost-shared and to include forest access roads, silviculture camps, tree nursery expansions, soil surveys, and research and development work.

An active role is also being maintained in the Province's program of modernization and improvement of the pulp and paper industry through advice to the Ministry of Industry and Tourism.

Ontario Geological Survey

The Ontario Geological Survey provides information on the geology and mineral resources of Ontario to encourage industrial exploration, provide a basis for land-use planning, and aid in the development of non-renewable resource policies.

Geological, geophysical and geochemical surveys identify favorable locations for mineral and aggregate deposits and provide increased knowledge and understanding of the geological history of Ontario. Data on mineral deposits are compiled, and areas having significant potential identified. Educational programs and published reports and maps are made available to the public. Additional scientific contributions are made by presenting papers and leading field trips at geoscience conventions.

The Ontario Geological Survey administers the Mineral Exploration Assistance Program (MEAP) whereby the Government reimburses an individual or company one-third of the cost of an approved exploration expenditure (maximum $100,000) in any of six designated areas.

Members of the Ontario Geological Survey attended several conferences to present papers or poster sessions, chair sessions or present a display of O.G.S. services. These included the annual meeting of the Geological Association of Canada/ Mineralogical Association of Canada at Quebec City and nine other conferences.

The second Geoscience Research Seminar was held in Toronto, December 5-7, 1979, to hear the findings of 22 provincially-funded university research projects carried on during the 1978-79 fiscal year. Grants totalling $475,567 were approved for the nine universities participating under the Ontario Geoscience Research Grant Program.

Precambrian Geology

In 1979 a total of 26 field crews conducted Precambrian bedrock geological surveys distributed throughout the Province from Red Lake to Sharbot Lake. Surveyed areas ranged from 185 km² to 900 km² (70 to 350 square miles), depending upon the detail and scale of the survey, and in total 27 projects were undertaken. Of these, 19 projects, comprising the ongoing Survey projects, covered about 3100 km² (1,200 square miles) at a detailed scale (1:12,000 to 1:31,680) and about 1800 km² at reconnaissance scale (1:50,000 to 1:126,720).

Of the remainder, seven projects (NOGS) supported by the Ministry of Northern Affairs and one project (KLIP), funded jointly by the Ministry of Northern Affairs and the Canada Department of Regional and Economic expansion, covered an additional 1280 km² (450 square miles) in detail.

The objectives of these surveys are to produce interpretive maps of Precambrian bedrock geology, identify geological environments favorable to the occurrence of mineral deposits, identify bedrock features which influence mineral concentration and land-use and encourage and guide exploration and resource planning.

Base program surveys concentrated on five major geological belts across the Province and on special studies of volcanic and plutonic processes influencing mineralization. The projects undertaken in 1979-80 represent components of a long-term base program in five high mineral potential geological belts.

These projects included surveys in: (1) The Red Lake, Birch Lake and Ferdinand Lake areas of the Uchi Belt; (2) The Kenora, Dyment, Atikokan, Armstrong and Nakina areas of the Wabigoon belt; (3) The Schreiber, Wawa, Batchewana and Swayze areas, and studies of the Kirkland Lake–Timmins regional stratigraphy and mineral deposits, all in the Abitibi–Wawa belt; (4) The Lake Wanapitei and Cobalt areas in the Southern Province; and (5) The Wilberforce and Sharbot Lakes areas of the southern Grenville Province.

In addition regional studies of alkalic complexes throughout the Province, and of characteristics of felsic volcanic rocks and felsic plutonic rocks associated with mineral deposits, were carried out.

Seven special projects were supported by the Ministry of Northern Affairs as components of the NOGS program. These were located in the Sioux Lookout, Longlac, Chapleau, Abitibi, Cobalt and Sudbury areas. One project, jointly funded by the Ministry of Northern Affairs and the Canada Department of Regional and Economic Expansion, was focussed upon the Kirkland Lake area as a component of the Kirkland Lake Initiatives Program.

In addition to field operations, a geological compilation map (1:253,490) of the Red Lake-Birch Lake area was completed and one of the Tashota-Geraldton area was in preparation. Scientific papers, talks, field trips and consultation services were provided for industry, scientific, and Ministry groups.

Engineering and Terrain Geology

The Engineering and Terrain Geology Section is responsible for the survey and analysis of all geological materials younger than the Precambrian. These include the sedimentary rocks of Paleozoic and Mesozoic age of the James Bay Lowlands and southern Ontario, together with the great variety of glacial deposits of Quaternary age which cover the entire Province.

Major thrusts in these responsibilities are the stratigraphic mapping of the rocks of these ages and the preparation of an inventory of mineral aggregates throughout the Province. An important role is to provide information to, and liaise with, municipalities for aggregate resource planning.

Nine Quaternary Geology field parties were active during 1979. Several areas in southwestern, southcentral and eastern Ontario, in addition to localities near Kirkland Lake, Timmins, Hearst and Atikokan, were investigated to provide maps of surficial materials and sand and gravel deposits. A drilling program to investigate the subsurface rocks in the Windsor area was completed, and a study of the Paleozoic limestone and dolostone resources of Manitoulin Island, funded by the Ministry of Northern Affairs, was continued for a second year.

Work continued in 1979 on the preparation of aggregate resource inventories for all townships in southern Ontario designated under The Pits and Quarries Control Act (1971). The engineering terrain evaluation of approximately 370 000 km² (143 000 mi²) of northern Ontario, that was begun in 1977 with funding provided by the Ministry of Northern Affairs, was concluded in 1979. Many maps and reports from the early phases of this project have now been published. An additional area of 30 000 km² (11 500 mi²) in the Algonquin region of southern Ontario was investigated in a similar fashion during 1979.

The Section continued to supply technical support to a study of the physiography and surficial geology of northwestern Ontario by the Ontario Centre for Remote Sensing.

Geophysics/Geochemistry

Staff scientists of the Geophysics/Geochemistry Section continued their three-year gravity survey of northeastern Ontario. During 1979, 6100 km² (2355 mi²) were surveyed in the area of Gowganda, Shining Tree and Gogama.

Results of two special projects funded by the Ministry of Northern Affairs were released in June, 1979. First, an aeromagnetic survey of the Marshall-O'Sullivan Lakes area, covering 2350 km² (135 mi²), was released to provide information about the stratigraphy and structure of Precambrian rocks obscured due to scarcity of outcrops. Second, the results of an airborne multifrequency electromagnetic survey, to map

the electrical conductivity of earth materials as an aid to lignite exploration in the Cretaceous Basin south of James Bay, were released.

During the year the results of two Federal-Provincial airborne gamma-ray spectrometer surveys were released — in northwestern Ontario a 90 000km² (34 740 mi²) area between Lake Nipigon and the Severn River, and in northeastern Ontario a 75 000 km² (28 950 mi²) area between 84°W longitude and the Quebec border southward from Cochrane. These programs provide data base information for uranium mineral exploration and for the geological assessment of Ontario's uranium potential.

Another type of Federal-Provincial survey, a regional lake sediment geochemical survey covering 34 000 km² (13 100 mi²) between Sault Ste. Marie and Manitouwadge, was released in May, 1979.

Geochemical staff of the Section supervised an airborne geochemistry test program in two forest covered areas of the Canadian Shield as part of the Northern Ontario Geological Survey (NOGS), and continued the geochemical basal till survey as part of the Kirkland Lake Incentives Program.

Mineral Deposits

The Mineral Deposits Section studies deposits of both metallic and nonmetallic minerals and their distribution, geology, reserves and potential. An important role is to provide reserve data and resource potential estimates for use in government planning, particularly for land-use, parks and transportation corridors, and as background for studies by the Mineral Resources Branch.

The Section began a five-year, ten component industrial minerals program for the Ministry of Northern Affairs in northern Ontario, a detailed study of uranium mineralization near Bancroft, and a special study of Ontario's uranium data base relative to Canada and the world. Uranium deposits in Saskatchewan, the United States and Australia have been visited.

On-going studies included base-metal associations within the Grenville Province, a nickel inventory of the Sudbury area, gold deposits in the Atikokan area, Early Precambrian "porphyry type" deposits, and geological and geochemical guidelines to gold exploration in the Timmins area.

On a routine basis, many producing mines and exploration sites were visited.

Mineral Exploration Assistance

Government payments under the Mineral Exploration Assistance Program (MEAP) for the fiscal year were $647,514, bringing the total government expenditure since 1971 to $3,630,836. The six designated areas are Eastern Ontario, Red Lake, Atikokan, Geraldton-Beardmore, Kirkland Lake, and Cobalt-Gowganda. Open File Reports 5114, 5147, 5209, 5230, 5251, 5272 and 5304 cover MEAP to March 31, 1980.

Regional Geologists

Regional and Resident Geologists' Offices were maintained in the following centres: Kenora, Red Lake, Sioux Lookout, Thunder Bay, Sault Ste. Marie, Sudbury, Timmins, Kirkland Lake, Huntsville, Kemptville, Richmond Hill and London. During the year a new office was established at Tweed. Regional and Resident Geologists provide a consultative service to government, industry and the public on the geology and mineral deposits of the province.

During the year, visits were conducted on a regular basis to operating mines and prospects, and geoscience data for numerous land-planning functions were provided. A variety of field mapping projects and specific studies were also undertaken.

A library of published and unpublished geoscience information is maintained in each Office, including reports of the Mineral Resources Group, reports of other government agencies, and records of exploration activities submitted for assessment work credit.

Special Programs

Pembroke-Renfrew Initiatives (PRIP)

The Pembroke-Renfrew Initiatives Program (PRIP) is financed jointly by the Canada Department of Regional and Economic Expansion and the Ontario Ministry of Treasury and Economics. The field studies began in 1976 and were completed in 1978. In 1979 there was steady progress in processing and interpreting the data and in publishing the results.

Six Preliminary Maps, one Miscellaneous Paper, and two Open File Reports were released during the year. These publications dealt with base metals, precious metals, iron and molybdenum deposits, marbles, and industrial minerals of the Pembroke-Renfrew area. Four preliminary geological maps were released covering northern and western Renfrew County and the Khartum area.

As a result of this work exploration has been undertaken in the detailed survey areas, and the regional survey has for the first time provided a comprehensive scientific base upon which mineralization concepts can be devoped to guide exploration and resource management.

Northern Affairs Development (NAGS)

In the summer of 1977, the Ontario Geological Survey commenced a three-year Northern Affairs Development Program (NAGS) funded by the Ministry of Northern Affairs. The program had three objectives — to stimulate exploration for fossil fuels in Ontario, to stimulate mineral exploration throughout northern Ontario, and to improve the land capability and aggregate potential data base to assist northern community and regional planning.

A helicopter-supported geological survey of the Burntbush-Detour Lake area north of Lake Abitibi, covering 4,000 km² (1,500 square miles), was completed by the Precambrian Geology Section in 1978-79. Preliminary maps and an open file report were released to the public in 1979 and a final report and map were in process of publication in 1979-80. This survey encompasses the major new Amoco gold deposit at Detour Lake and provides a basis for exploration access and land-use planning in this rapidly developing area.

Many maps and reports from the early phases of the collection of surficial geology data in northern Ontario, to assist land-use planning and the search for sand and gravel supplies, have now been published and all the remaining ones will become available in 1980.

The survey results of an aeromagnetic survey covering 2350 km² (135 mi²) in the Marshall-O'Sullivan Lakes area were released in June, 1979. These 20 maps at a scale of 1:15 840 show the residual total magnetic field intensity at 10 gamma intervals superimposed on a photo-mosaic base.

A multi-frequency airborne electromagnetic survey over the Cretaceous Basin in the James Bay Lowlands was completed during 1978. Data were obtained, allowing the mapping of the electrical properties of the subsurface unconsolidated material and related lignite deposits. The contours of apparent depth to the upper surface of the more conductive horizon as well as its apparent conductivity were released June, 1979, on photomosaic base maps at a scale of 1:50 000. The maps are accompanied by

computer-plotted profiles and a description of the interpretation technique employed.

Northern Ontario Geological Survey (NOGS)

Commencing in 1978, The Ontario Geological Survey, with funding provided by the Ministry of Northern Affairs, began a six-year program (NOGS) designed to stimulate further mineral exploration and development in northern Ontario.

In 1979, detailed mapping by the Precambrian Geology Section was performed at a scale of 1:15 840 in the Lateral Lake, Firstbrook Lake, Klob Lake and Capreol areas in addition to mapping of the Shawmere anorthosite rock mass. There were also special studies of the footwall and country rock structures of the Sudbury Irruptive and of the alteration features related to mineralization within volcanic rocks of the Larder Lake-Matheson area.

The Quaternary Geology Subsection mapped the Nassau Lake and Timmins areas at a scale of 1:50 000 to provide an inventory of the surficial geology deposits, determine potential aggregate resources, and describe the geological history of the glacial deposits.

During 1979, 1744 localities were examined and six drill holes completed to assess the limestone and dolostone resources for the southeastern portion of Manitoulin Island. As a direct result of the as yet uncompleted Manitoulin Island Resource Study, one quarry of 6000 tons/day capacity is opening at the western end of the island and another quarry is currently under predevelopment investigation.

Experimental airborne geochemical surveys were conducted in the Marshall Lake area (255 line km; 158 line mi). The SURTRACE technique developed by Barringer Research Limited, where samples are collected by vacuuming loose particulate material from the leaves and bark of trees onto adhesive tape, was utilized.

In 1979, the study of chromite deposits was concentrated on the type and distribution of ultramafic-mafic suite rocks to distinguish different environments of chromite occurrence. A two-year examination of the uranium deposits of the Southern Province northwest of Lake Wanapitei and of the southern portion of the Cobalt Embayment began in 1979.

A study was also undertaken on the nature, geological association and distribution of base-metal occurrences in the Cobalt area to gain a better understanding of the processes involved in the formation of mineral deposits there. This study is an integral part of a broader metallogenetic program in the eastern part of the Southern Province.

Kirkland Lake Initiatives (KLIP)

The Kirkland Lake Initiatives Program (KLIP) is funded equally by the Canada Department of Regional and Economic Expansion and the Ontario Ministry of Northern Affairs. All technical aspects of the program, from the initial formulation to the final publication of results, have been entrusted to the Ontario Geological Survey.

In 1979 Precambrian stratigraphic mapping in the eastern part of the area was completed. This study was aimed at delineating accurately the two stratigraphic horizons that contain gold mineralization. Results of the study have allowed projection of the mineralized strata at depth, westward from the Kerr Addison Mine.

An airborne electromagnetic-magnetic survey over approximately 2455 km^2 (945 mi^2), covering 28 adjoining townships in the KLIP area, was released in September, 1979, and triggered a staking rush. A geochemical reconnaissance basal till survey also got well under way. It is proving the effectiveness of employing dual-tube, reverse-circulation rotary drills for deep overburden drilling and the use of man-portable percussion drills for shallow overburden drilling to obtain samples from basal till sheets.

Quaternary mapping was completed for the Kirkland Lake and Ramore map sheets at a scale of 1:50 000 to determine the extent, characteristics and local variation of the glacial deposits. Such information is of use in assessing aggregate resources in engineering and geochemical exploration studies and in land-use planning.

Geoservices

The Geoservices Section provides a support and service function to Ministry geoscientists, management and public.

Geoscience Information Office

This Office organizes and conducts classes of instruction in geology and mineral exploration, answers geological inquiries from the public, and prepares or assists in the production of popular brochures and guide books on the geology of Ontario.

During the year, educational activities of the Geoscience Information Office included two basic courses, one field course and several field trips in addition to 13 miscellaneous talks on geology for the general public. During the summer, half-day geological talks were arranged for most of the Junior Ranger camps of the Ministry, and five exhibits were organized for various earth science conferences or meetings.

The following publications were released during the year: an updated "Rocks and Minerals Information", a slightly revised "Geological Highway Map — Southern Ontario", and a "Location of Field Projects" leaflet.

Geoscience Laboratories

The Geoscience Laboratories provide scientific support for the programs of the Mineral Resources Group. Assistance is also offered to the private sector. Fees are charged for outside work according to a schedule set to avoid competition with private laboratories.

Analytical Laboratory. Laboratory scientists conduct research on analytical techniques and develop new or improved methods of analysis. They provide analyses for a wide variety of components in geological materials. These range from the determination of major constituents of rocks and ores to the geochemical analysis of soil, rock, water and vegetation samples for trace elements. The Laboratory is equipped with up-to-date analytical equipment including simultaneous, multi-channel, computer controled x-ray fluorescence; inductively-coupled-plasma optical emission; and atomic absorption spectrometers.

The Laboratory continued to support reference material projects sponsored by CANMET. As a member of the newly formed International Working Group on Geostandards, data were submitted on the three new reference rocks AN-G, BE-N, and MA-N.

Methods development and research continued to be important for meeting program needs. A paper entitled "The Use of the Scanning Channel of a 'Simultaneous' X-Ray Fluorescence Spectrometer in Trace Element Determinations on Rock Samples" was presented at the annual meeting of the Canadian Institute of Chemistry.

The following new methods were developed over the past year: a geochemical method for gold, using graphite-furnace atomic absorption, capable of determining gold down to the 2 ppb level; an automated hydride method for tin with a detection limit of 1 ppm; an automated colorimetric procedure for phosphorous; an x-ray fluorescence method for tantalum; and a solvent-extraction/x-ray fluorescence method for the rare-earth elements.

Mineral Science Laboratory. This Laboratory conducts research and develops methods in mineralogy, petrology, and physical testing. It also conducts examinations and projects for geologists of the Ontario Geological Survey and consults

with members of the public and mining companies. The Laboratory is equipped with extensive sample-preparation facilities. Mineralogical studies involve the use of petrographic and x-ray diffraction techniques.

In the past year a clay mineral library was established and procedures developed, using clay standards, to identify clay minerals in complex mixtures. New geotechnical soil-testing equipment was assembled for ASTM tests of compression, compaction, consolidation and shrinkage.

The Laboratory assisted with analytical, mineralogical and physical testing in the following geological projects: Atikokan Gold Study; Manitoulin Island Resource Study; Kirkland Lake Initiative Program (KLIP); radioactive mineral study of southern Cobalt Embayment samples; correlation of Indian artifacts to source areas using mineralogy and trace elements (joint project with Ministry of Culture and Recreation scientists); concentration studies of apatite (a potential fertilizer) from a feldspar-biotite-magnetite-apatite rock using a magnetic separator; a quartz sand mineralogical and quality study; till lithology studies; and various clay mineral studies.

Geoscience Data Centre

The Centre performs tasks related to the gathering, research, compilation and computer-processing of geoscience data on mineral deposits of Ontario; indexes publications released by the Ontario Geological Survey and reports submitted for assessment work credit; and within its means investigates and improves upon existing data handling systems.

Indexing of OGS publications, assessment work reports, and reports received under the Mineral Exploration Assistance Program continued. The indexed information is stored in the computerized Ontario Index to Geoscience Data which at the end of the year covered more than 12,000 reports and maps.

In addition to retrieving data requested by the government and public users, the capabilities of the Index have, amongst others, been applied to produce Miscellaneous Paper 77, "Index to Published Reports and Maps, Division of Mines, 1891 to 1977" and yearly supplements. These list, for ease of reference, all publications by document number, author name, and geographic entity (NTS system, township, and district).

The Centre participated in the development of a system to store and process chemical analytical data on rock samples collected by Ontario Geological Survey Staff. Computer programs for data manipulation were written, and file building has started.

As part of the Northern Ontario Geological Survey (NOGS) program, funded by the Ministry of Northern Affairs, the Data Centre is involved in a Data Management Project. It includes (a) preparing a general index to publications released since 1965; (b) compiling mineral deposit data on gold; and (c) building a computerized mineral deposit index file. The additional project of increasing the NTS detail referenced in the Ontario Index was completed.

The Assessment Files Research Office maintains for public use a library containing all technical surveys filed for assessment credit or filed in accordance with the Mineral Exploration Assistance Program (MEAP).

An important addition to this depository was made by transferring the mineral deposit files, which are being compiled by the Geoscience Data Centre, to the Research Office. Also filed and made available for public examination are company prospectuses and summary reports received from the Ontario Securities Commission.

As a follow-up of an earlier feasibility study on implementing an integrated province-wide indexing, microfilming, and filing system for industry exploration reports, a detailed design study was completed. Implementation of the system is scheduled to begin in 1981

Scientific Review Office

This office is responsible for the scientific review, editing and publication of all geoscience reports and preliminary maps. The following were printed during the year:

Base Budget Publications of Ontario Geological Survey

Reports, Studies	9
Open File Reports	17
Miscellaneous Papers, Miscellaneous Publications	10
Mineral Deposit Circulars	2
Guidebook	1
Colored Maps (cartography by Lands and Waters)	12
Preliminary Maps	504

Special Project Publications of Ontario Geological Survey

Open File Reports	6
Miscellaneous Papers, Miscellaneous Publications	1
Northern Ontario Engineering & Terrain Geology Studies	9
Colored Maps (cartography by Lands and Waters)	19
Preliminary Maps	157

Mineral Resources Branch

The prime objective of the Branch is to assure the orderly development and optimum use of provincial mineral resources in line with the Ministry's policy of broadening the base of mineral development and processing in Ontario. The most important function of the Branch is to provide the Minister of Natural Resources with in-depth researched information and mineral policy options, as well as to ensure equitable mining tax assessments. Major areas of responsibility for the Branch are as follows:

(a) Development and administration of mineral resource policies;

(b) Analysis of the effectiveness of present public policies in various jurisdictions in respect of mineral resource development;

(c) In-depth world-wide mineral commodity studies on each mineral element in provincial mineral reserves, with priorities set for nickel, copper, zinc, iron ore, precious metals, uranium and structural materials;

(d) Administration of The Mining Tax Act, The Pits and Quarries Control Act and certain parts of The Mining Act;

(e) In-depth analysis of the existing tax systems to develop a more effective mineral taxation policy;

(f) Economic studies of metal and mineral markets and factors affecting Ontario's mineral output;

(g) Federal-Provincial liaison on mineral resources problems;

(h) Determination of an inventory of the Province's mineral resources, commodity by commodity, and commercially viable ore reserves;

(i) Continuing analysis of the mineral reserves position against present and projected world supply and demand for minerals;

(j) In-depth studies of mining and exploration company decision-making processes;

(k) Preparation of plans to stimulate exploration for, and development of, mineral resources in Ontario;

(l) Studies on economic behaviour of multi-national mineral resources companies;

(m) Co-ordination of external research studies to evaluate junior and senior mine financing aspects of models;

(n) Development of computer models to assess the impact of taxation and environmental controls on the Ontario mining industry and of world mineral market forecasts and simulations by commodity; and

(o) Development of a computer data base to store, retrieve and analyze the Census of Mines, Quarries and Sand Pits; Survey of Mining Operations; and Survey of Exploration Companies.

Metallic Minerals

The objective of the Metallic Minerals Section is to provide mettalic mineral policy options on a commodity or topical basis. This requires the Section:

(a) To monitor metal market trends as well as technological progress in the mineral sector; and

(b) To monitor policy developments in other jurisdictions and other policy fields with respect to their anticipated impact on Ontario metal mining and processing. During the year the bulk of analytical studies which developed the tools for a quantitative analysis of such impacts were completed and the last ones initiated.

The discussion paper, entitled "The Ontario Metal Mining Industry: Present and Future", was re-issued. It is still a fact of life that the health of the Ontario mineral sector depends largely on the healts of the economies of the industrialized nations such as the United States, the EEC and Japan and, as was demonstrated in Policy Background Paper No. 5, it depends critically upon often intractible domestic policy programs.

On a commodity basis, a study, entitled "Towards a Nickel Policy for the Province of Ontario", was published as Policy Background Paper No. 4.

This is the first compendium on the nickel industry anywhere, and since publication the projections advanced in the study have been largely borne out by events.

A paper on the role of the zinc industry of Ontario in a global perspective was presented at the Plenary Session of the 11th Commonwealth Mining and Metallurgical Congress in Hong Kong in May, 1978. This paper was based upon the previous year's zinc commodity study. Since then a similar paper with updated material was presented at a meeting of the Bathurst, New Brunswick, Chamber of Commerce.

Mineral Policy Background Paper No. 5, "Investment Effects on the Mineral Industry of Tax and Environmental Policy Changes: A simulation Model", was completed and published. This paper quantified the investment impact of past governmental actions in the area of taxation and environmental policy on the Ontario and Canadian mineral industry and provides the tools to quantitatively anticipate further policy changes in these policy fields.

Policy Background Paper No. 6, "Factor Substitution and Biased Technical Change in the Canadian Mining Industry", Policy Background Paper No. 7, "The Platinum Group Metals–Ontario and the World", Policy Background Paper No. 8, "World Mineral Markets: An Econometric and Simulation Analysis", and Policy Background No. 9, "Guide to Legislation Affecting Mining in Ontario", were issued during the summer of 1979.

Policy Background Paper No. 10, "The Future of Nickel and the Law of the Sea", was issued in English and French and widely distributed. It highlights the Branch's ongoing contribution to the United Nations Law of the Sea conference in support of the interests of the Province's mineral sector.

Policy Background Paper No. 11, "Ontario Mining Statistics–A Preliminary Compendium", was also issued early in 1980. Work on the second volume of this compendium is proceeding and expected to be completed in 1980. A revised and expanded version of the world mineral market simulation model is being prepared for issue in 1980 as is a computer model manual for it.

A monograph (entitled "Does Resource Conservation Pay?"), which was directed at the issue of alleged mineral resource scarcities on a world-wide basis, was accepted by the International Institute for Economic Research and published in the summer of 1978.

The mineral inventory work carried out in co-operation with Geological Survey of Ontario staff, which forms an important part of the data base for analysis and formulation of policy options for the Government of Ontario, continued; the mineral inventories of uranium and zinc are under constant review. The mineral inventory for nickel was completed and is going to be kept under review.

Work on environmental problems of the mining industry is mushrooming. The major issues here, with which policy in the minerals and in other fields still has to come to grips, are as follows:

SO_2 emissions, the acid rain controversy, the handling of tailings disposal problems, and the change in silica standards. Not all of these issues are being dealt with by the Ministry of Natural Resources as the lead Ministry; all of them are of great technical complexity; and all of them are of potentially deadly impact upon the Ontario metal mineral sector.

Consultant's reports on the changing structure of mine financing and of junior mine financing were published in 1978. Involvement in Onakawana is increasing. Two mine hazard land studies have been completed and are being reviewed. Work on a new Mining Lands Act is progressing.

Liaison with organs of the Federal Government, Provincial Government and some foreign jurisdictions, as well as

with mining company representatives, continued on matters pertaining to Ontario mineral policy and mineral industry matters of mutual concern.

As required the Section undertakes detailed analysis and recommendations of alternative solutions for any of the problems that affect the metallic mineral sector of the economy as they assume importance in the eyes of the public, the industry and this Ministry.

A major new responsibility for the coming years will be more effective dissemination of the results of the analytical work carried on in the Section to other government agencies and the general public to increase the understanding of the complexity of mineral sector problems.

A major new text book, "The Economics of Mineral Extraction", based largely on work carried out by Metallic Minerals Section in preceeding years and co-authored by staff, was accepted and issued by Praeger Publishing Co., New York, N.Y.

Industrial Minerals

The Industrial Minerals Section is responsible for all provincial policy matters related to industrial minerals. Legislation, policies and guidelines are recommended as they pertain to industrial minerals, including mineral aggregates.

The Section is also responsible for the uniform administration of The Pits and Quarries Control Act, 1971 and for the development of mineral aggregate policies and guidelines for local government to utilize when preparing mineral aggregate planning policies. The planning policy development function is currently being implemented through municipal official plans to ensure that proper direction is given to the protection of mineral aggregate resource areas.

The Section continually provides consultation and guidance to the Ministry's field offices. This is essential for the over-all monitoring of enforcement and uniform application of relevant legislation. The processing of pit and quarry applications from the Sudbury and Sault Ste. Marie areas of northern Ontario are still handled by the Section.

A major focus of activity throughout 1979 and the first quarter of 1980 has been the involvement with Bill 127, An Act to revise The Pits and Quarries Control Act, 1971, which received its second reading in December, 1979. The Bill flows from the Report of the Ontario Mineral Aggregate Working Party, which was submitted to the Minister of Natural Resources in December, 1976. The Section has been involved in hearing briefs submitted from the public and industry regarding provisions contained in Bill 127 and is now actively involved in having the Bill enacted as legislation.

The Section maintains liaison with, and provides its expertise to, aggregate producers and consumers, the general public and all levels of government.

Since 1978 the Section has been monitoring, and liaising with, consultants who have been contracted to carry out a bulk transportation study for mineral aggregates. The study will complement the earlier mineral aggregate studies which were completed for various parts of Ontario. The results of the study will be used to provide input to a planning process for the transportation of aggregate from more remote areas to meet future demand. This study will be released in mid-1980.

The Section is also funding a study on agricultural rehabilitation of pits and quarries, contracted out to the University of Guelph. Since some sand and gravel deposits are coincident with prime agricultural lands, there is the potential for conflict between the needs of the construction and agricultural industries. The study will examine this issue and methods of rehabilitating extracted lands for agricultural production.

The following publications, dealing with the rehabilitation of pits and quarries, were released during the year:

From Pits to Playgrounds: Aggregate Extraction and Pit Rehabilitation in Toronto;

Trees and Shrubs for the Rehabilitation of Pits and Quarries in Ontario; and

Pit and Quarry Rehabilitation: The State of the Art in Ontario.

Extensive work has been started to improve our knowledge of the distribution, quality, extraction, processing, uses, supply and demand for the many industrial minerals found in Ontario. Among these are feldspar, gypsum, kaolin, nepheline syenite, silica, talc and whiting. Development of Ontario's rich inheritance of industrial minerals is being encouraged to meet expanded needs of domestic and foreign manufacturers.

Mineral Statistics

The Mineral Statistics Section is responsible for the following functions:

1. Economic and statistical research as an input to the development of mineral policy options;
2. Development and maintenance of an economic and mineral commodity data base;
3. Annual survey of mining operations, mills/concentrators, smelters/refineries;
4. Annual census of mines, quarries and sand pits;
5. Shared responsibility with Statistics Canada for the mineral industry segment of the Annual Census of Manufactures;
6. Shared responsibility with Statistics Canada for the Annual Survey on Exploration, Development, Capital and Repair Expenditures;
7. Shared responsibility with the federal Department of Energy, Mines and Resources for the Monthly Survey of Mining & Metallurgical Operators;
8. Collection and analysis for national and international data on all mineral commodities, prices, markets, consumption, imports and exports;
9. Publication of the Statistical Report on the Mineral Industry of Ontario;
10. Publication of the revised Ontario Mineral Review;
11. Consulting services in the field of mineral statistics to other branches of the Ministry, other Ministries and the interested public;
12. Administration of Part X-Refinery Provisions of The Mining Act;
13. Sharing, with Statistics Canada and the Department of Energy, Mines and Resources, the work of monthly and annual collecting, editing, storing, retrieving, analyzing and distributing of mineral information; and
14. Maintenance of a library of general mineral information including company annual reports to shareholders.

The 1979 Census and Survey of over 2,000 mineral operations were conducted in January, 1980. The Census will be closed out for final edit in September, 1980.

The Mineral Statistics Section has been reorganized to meet the following main objectives:

1. Develop a user-oriented computerized mineral data base;
2. Provide the analysts and administrators in the Mineral Resources Group and the Regions with more direct access to the mineral data base (normally without requiring assistance from the Mineral Statistics Section while, at the same time, maintaining the confidentiality of company data by using internally programmed tests); and
3. Increase the input of world mineral statistics by upgrading the level of data management.

A computerized source data base system called ArrowStat (Analysis of Regional Resources World Statistics) was designed in 1979 and early 1980 and will be developed and im-

plemented in late 1980. ArrowStat will be capable of applying complex statistical analysis to the data base of mineral resource information and of organizing data for use in econometric models.The system is designed such that the information needs of the Ministry of Natural Resource regions are considered to a far greater extent than in the manual system. The structure of ArrowStat is oriented such that the system will eventually be capable of accepting and analyzing statistics which are being input to data banks by large statistical agencies throughout the world.

Access to the Canadian Socio-Economic Information Management System of over 300,000 time series is now available at the Mineral Statistics Section interactively via computer terminal. This system is available for integrative economic analysis of the mineral economy. Recent studies have shown that this system can reduce many statistical analysis costs by half and can reduce file storage space significantly.

The Section contributes directly to the System by means of its operation of the Annual Census of Mines, Quarries and Sand Pits which, in 1980, for the first time, was fully handled by the Section except for the federal/provincial shared modification of the input forms.

Mining Tax Assessment

The Mining Tax Assessment Section is solely responsible for the administration of The Mining Tax Act and Regulations. The office of the mine assessor is assisted by a staff of six assistant mine assessors whose roles include reviewing, auditing and analyzing annual tax returns. This process facilitates the mine assessor's appraisal of the "pit's mouth value" of minerals produced in Ontario and is followed by the issuing of tax assessment notices.

In the year ending March 31, 1980, the number of tax assessments issued increased by 40 per cent to 74 from 53 in the preceding year. The taxes on the assessments amounted to $54,341,303.

Mining tax returns received during the year indicated tax liabilities under The Mining Tax Act in the amount of $41,800,000.

The total of tax revenues collected for the year amounted to $98,900,000, an increase of $57,100,000 or 136.6 per cent over the $41,800,000 revenues collected for the previous year.

This Section will be responsible for administering the new Ontario Mineral Exploration Program (OMEP) Act, 1980, and Regulation. A budget of $4,000,000 in grants and income tax credits will benefit individuals and corporations who invest in provincial mineral exploration before March 31, 1981.

Wildlife Branch

The objectives of the wildlife programs are to provide:

An optimum number and variety of wildlife-based outdoor recreational opportunities accessible to, and for the continuing benefit of, the people of Ontario;

A continuous, sustained, optimum contribution to the economy of Ontario through tourism and its related industries, and through the commercial utilization of wildlife; and

Protection, conservation and enhancement of the wildlife and wildlife habitat of the Province for its cultural value and to support the social and economic objectives.

Policy Development

Policy Development Section determines the direction and intent of the Provincial Government with respect to wildlife.

A comprehensive provincial plan for wildlife has been undertaken. The first objective is to define more precisely than in the past the provincial governments's responsibility for wildlife. The next is to determine an over-all Ontario wildlife strategy for the future to which work plans can adhere.

Program Development

Non-Game

Ontario's non-game program was formally established in March, 1979, with responsibilities encompassing both non-game and endangered species. A draft policy is now under review, in keeping with the Ministry's commitment to place a high priority on development of policy for all wildlife activities.

The endangered species component of the program is focussing on the preparation of status reports for candidate endangered or threatened species and the continued monitoring of species which are already designated under The Endangerd Species Act. No additions have been made to the list of 13 officially designated species, although one candidate species has been identified.

The year 1980 is the fourth in a five-year project to reintroduce peregrine falcons to Ontario. Surveys for active bald eagle nests were repeated again this spring on the Lake Erie shoreline, and censuses of the northwestern Ontario population have also continued. Surveys for two other officially listed species — piping plovers and West Virginia white butterflies — were planned and initiated in southern Ontario.

Small-Game Management

A comprehensive background plan for small game management was completed. Policy and program development for small game and waterfowl management, as well as for migratory bird management, progressed to the review stage.

Most populations of small game remained relatively stable. Hungarian partridge, woodcock, snowshoe hare and ruffed grouse should again be abundant in the next hunting season. Following a mild winter, pheasant numbers appear to have increased in the southwest. Cottontail rabbits undergo natural fluctuations in numbers and appear to be increasing from a recent, low population level.

Waterfowl Management

A program to produce a wild breeding population of Canada geese in southern Ontario, started in 1968, has been most successful. Viewing and hunting opportunities continue to increase because of the estimated population exceeding 30,000 birds. Geese have become over-abundant in some areas, such as Toronto's waterfront, where conflicts with others uses of the land have been increasing. Efforts to reduce the waterfowl population are continuing in co-operation with the Canadian Wildlife Service and a number of other agencies.

Waterfowl banding projects in 1979, to gather important management data for use by Ontario and the United States, are to be continued in 1980. Ontario co-operates with the Canadian Wildlife Service and a number of Atlantic and Mississippi Flyway States where the birds are hunted or spend the winter.

In the Hudson-James Bay Lowlands, the muskeg was free of snow early in the spring of 1980, a factor which favors production of Canada and snow geese. The effect of drought conditions in the midwest during sprin migration, however, appears to have resulted in reduced energy reserves in breeding birds and depressed production in some areas.

In southern Ontario, duck production appears excellent for 1980 owing to favorable water levels which could provide one of the best production years on record.

Moose Management

A comprehensive moose management plan has been developed in light of continued high demands on a declining moose herd by the public for hunting and viewing. A Ministry review of the plan was initiated and a public participation program, involving 72 "open-house" meetings, was carried out.

The results of the program showed that the public strongly supports the implementation of more effective management strategies to rehabilitate moose population. The provincial herd numbers about 80,000 animals, about one-half the capacity of the range.

A controlled moose hunt in the Kapuskasing-Hearst area (W.M.U. 23) was introduced successfuly. The prime objective of this system of licensing hunters is to define and resolve problems related to allocation of the resource and develop the best procedures for carrying out more highly organized hunts in the future.

The success of the controlled hunt in W.M.U. 23 in regulating the harvest indicates that this technique can be applied elsewhere when long-range policies and plans require it.

Deer Management

A new deer management program was approved and implementation of some of the components has begun. Components of the new program include the introduction of a selective harvest system in 1980; better control of losses to predators and poachers; the establishment of more gun seasons with controlled hunter numbers in agricultural areas; improved data collection and analysis; and enhanced habitat management. Standards and guidelines for the new program are being developed to ensure better utilization of existing staff and funding

A shotgun season, with controlled hunter numbers, was held for the first time in part of agricultural southern Ontario in 1979. Approximately 1,650 hunters were authorized to hunt in Simcoe County and they took about 250 deer. Only six trespass incidents were reported by landowners and there were no reports of property damage or personal injury resulting from the hunt.

Bear Management

Black bear numbers, though difficult to assess, are believed to be generally constant. Hunters take about 4,000 bears per year, and the number of bear hunters is increasing. Bears causing conflict with agricultural activities or public safety are trapped, and relocated whenever feasible, or destroyed.

The black bear resource is still not providing all the recreational and economic benefits which this species is capable of providing in Ontario. The development of a more active bear management program has been initiated.

Wildlife Extension

Extension development Section provides public information on all matters related to wildlife and wildlife-based recreational activities. It develops provincial programs for conservation and management of privately owned lands as well as provincial programs of interpretation and education in both the public and private sector.

Studies during the year have included a survey on non-farming rural-landowner attitudes on wildlife and land use, a report on the economic aspects of wetlands, and the development of a Wetlands Inventory Manual.

Two films have been produced — "Wetlands Working for Us" and "Wildlife Habitats in Southern Ontario" — which are suitable for schools, naturalists' and sportsmen's clubs, and the general public. Work has begun on a series of information pamphlets on nuisance wildlife. The Section maintains a stock of pamphlets and other materials of an educational nature for the use of interested organizations and individuals.

Twenty-nine Provincial Wildlife Areas are maintained in southern Ontario to provide wildlife-based recreation on public land, and similar recreation is available on 13 Wildlife Extension Landowner Agreement Areas established with the co-operation of landowners to provide improved habitat and public access. Habitat is managed to produce wildlife for viewing and hunting and to protect wildlife populations.

The Section Maintains liaison with other governmental agencies and citizens' groups in the interest of conserving wildlife habitat and promoting educational efforts through the Ministry's 48 districts. These include National Wildlife Week and "viewing weekends."

Wildlife Services

Ontario's Conservation Officers are responsible for the enforcement of The Game and Fish Act and various other Acts administered by the Ministry of Natural Resources. They are also appointed as Fishery Officers under the Fisheries Act of Canada and as Game Officers under the Migratory Mirds Convention Act of Canada; they are authorized to enforce those Acts and regulations thereunder on behalf of the Government of Canada.

Wildlife Surveys and Records

Records of four years' hunting and non-resident angling licences are maintained as a service to the public. Statistics on hunting, including participation rates, hunter success and harvest, and characteristics of participants, are obtained through mailed questionnaires. This information supplements and corroborates data obtained in the field and forms the basis for wildlife management planning.

Furbearer Management

The 1978-79 trapping season had very significant increases in numbers of animals taken and prices paid for pelts. In total 14,983 trappers sold 929,196 pelts for more than $20.2 million. The beaver catch of 170,644 animals was worth $6.1 million; 526,890 muskrats were marketed for $3.7 million; and 105,263 raccoons brought $3.8 million. Royalties collected on fur totalled $678,790.55.

Patents have been applied for on the new humane live-trap (a foot-snare device) which has been developed by this Ministry. Arrangements are being made to have this trap manufactured commercially and made available to trappers. It is especially efficient in capturing coyotes, foxes, raccoons and feral dogs without harming them.

Eighty new instructors have been trained as Trapper Instructors this year. A total of 12 Fur Harvest, Fur Management and Conservation courses have been given by professional trapper instructors to 360 persons interested in trapping. A comprehensive manual for this course is in preparation.

Hunter Education

Progress continued in the expansion of the Hunter Education Program so that greater emphasis could be placed on hunting ethics, wildlife management, wildlife identification and bow hunting.

This expansion is additional to the traditional topics of firearm safety, safe hunting practices, survival and hunter-landowner relations. It upgrades the knowledge and skills of individuals applying for a first hunting licence.

The introduction of a revised Hunting Licence Examination in August further complemented the program and ensured that the minimum standards for the procurement of a provincial hunting licence were maintained.

The procurement and development of training aids, such as instructional films and Waterfowl Identification Guide, assisted the program instructor and ensured uniformity throughout the Province.

During the year 1,110 certified Hunter Education Instructors trained 35,080 students, and the Ministry's hunting licence examiners conducted 29,599 hunting licence examinations.

All administrative districts conducted instructor workshop while 25 program instructors completed the Ministry's Methods of Instruction course.

There was a total of 51 accidents of which five were fatal. This was a decrease of 14 injuries and three fatalities from 1978.

Wildlife Research

Research seeks to fill our knowledge gaps by investigations of population dynamics, behavior, physiology, reproduction, diseases and parasites, and intersections between selected species and their habitats.

The rabies research program moved to a much higher plane of activity, based on a grant from The Provincial Lottery. Four major contracts were designed to foster development of an inactivated rabies vaccine, plus appropriate pill forms and coatings, so that the final product will be compatible with the best bait developed by the MNR team. Field experiments have shown that about 70 per cent of foxes will eat a bait, when baits are dropped from low flying aircraft, near the edges of woodlots, at an over-all rate of about 100 baits per square mile. Further, almost all those foxes ate their first bait within 28 days of the drop. Those field data are essential knowledge when trying to develop a vaccine.

The Rabies Research Unit is also developing, in co-operation with Queen's University, a computer simulation model of rabies outbreaks. This model uses field observations as input and will allow testing of various rabies control tactics, providing key information necessary for the design of a field program to control wildlife rabies.

A study of black bears in the North Bay area is nearing completion. Extensive information on movements, habitat use, food habits, survival and reproductive biology have been collected. Unique data on the survival of bears aged 1-5 years were collected. Behavior and survival of cubs (orphaned when the female is killed during the spring hunt) is a subject of another study.

Field studies of moose have revealed active searching for sources of dietary sodium from mid-May to mid-July. This has three potential applications. (1) A high percentage of moose-vehicle collisions result from moose seeking salt which accumulates in roadside pools after winter salting. Testing of

repellants and other means to keep moose from using these dangerous man-made salt licks is progressing well. (2) The creation of artificial salt licks may attract moose to places where park visitors may see the animals more easily. Moose are not attracted to cattle salt blocks but prefer very dilute solutions. Therefore, salting along the edge of a pool or small lake may be a suitable method. (3) Widespread increase of sodium availability may be one tool to enhance moose populations. However, such a program must be carefully thought out, in relation to other environmental implications.

The Section is beginning a study of the influence of winter ticks on survival of moose. Observations in the wild suggest that winter ticks may become a major source of mortality where moose occur in high densities.

Other studies included behavior of moose and deer, use of nest boxes by goldeneye and other ducks in northern Ontario, parasites and diseases of black bears, and numbers and reproductive success of polar bears. Publications on the latter subject and on long-term deer studies are in preparation.

Resource Development (Native People)

The resource development programs assist the native Indian people of Ontario in the use of renewable natural resources for their economic benefit. The following projects were carried out during the year under the Federal-Provincial Resource Development Agreement.

Fur. This program provides for the placement of Indian trappers on vacant trapline areas. Aerial surveys are conducted and maps showing live beaver colonies are supplied to the trappers. Transportation of supplies, equipment and furs is also provided. Trappers' workshop are held to promote the improvement of trapping techniques and general handling of pelts.

Commercial Fish. Administrative and operational assistance is provided to native people in the Northwestern Region in their commercial fisheries activities.

Tourism. Seven goose camps were operated during the 1979 season by the Indian People along the James Bay and Hudson Bay coasts. Three goose camps have been turned over to individuals. Fort Severn Goose Camp was turned over to Mr. Jack Stoney of Fort Severn, Attawapiskat Goose Camp to Mr. Gabriel Spence, and Tidewater Goose Camp to Mr. James Richard of Moose Factory.

Hide Collection. In 1979 successful hunters provided nearly 11,000 moose and deer hides for the native people of Ontario. The continuing success of this program is due to advertisements and hunter contacts made over the years as well as the award of a "Bush Cap" to hunters who donate moose and deer hides. Presently there are more than 4,000 native people involved in the craft program. It contributes considerably to the native people's economy by providing material for handicrafts.

Timber. Assistance was provided to native people in various timber and lumbering operations and in reforestation and regeneration programs.

Planning. Representatives of Grand Council Treaty areas, No. 3 and No. 9, Union of Ontario Indians, and CORAID (Central Ontario Regional Amalgamated Indian Development) are members of the Resource Development Committee and assist Ministry and DIAND (Department of Indian Affairs and Northern Development) staff in planning programs of priority for the native people of Ontario as they relate to renewable resources. Indian Band Councils are also consulted about programs which would prove to be most beneficial to their members.

Game Management. Studies of deer populations, mortality rates and range potential have been conducted on Wikwemikong Reserve on Manitoulin Island at the request of the Band Council. The objective of this program is to provide guidance to the band in management of deer on Reserve land.

Northern Policy Development. Negotiation under the Tripartite Agreement (Canada, Ontario and the Chiefs of Ontario) to develop a policy for the management of wild rice and to recommend a mutually agreeable policy regarding Indian rights to wild rice made no headway. Ontario tabled a position paper regarding its negotiating position on Indian rights. Work continued on the development of a management policy in anticipation that negotiations would be resumed. Staff continued to participate in studies on proposed northern developments which have the potential to affect wildlife or wildlife habitat and policy statements, where applicable, were drafted.

Parks and Recreational Areas Branch

The Provincial Parks Branch was re-organized to become the Parks and Recreational Areas Branch on July 1, 1979, as part of the Ministry's Management Improvement Plan. The Branch now has four sections: Planning, Development, Operations, and Marketing and Communications. The last section is new and reflects increased emphasis on marketing of parks as part of a strategy to increase the tourism benefits from parks. The re-organization also reflects a broadened mandate for the Branch to develop policy for non-park recreational areas such as Crown lands, park reserves and recreation areas.

Marketing and Communications

Greater emphasis is being placed on the tourism objective of the provincial parks system. Plans are under way to promote provincial parks and help to develop related tourist services and activities.

To meet these objectives, the new Marketing and Communications Section has developed a marketing plan for provincial parks. The major promotional efforts outlined in the plan will unfold in the spring of 1981

The Parks Information Office has geared up for the expected demand by expanding into a Travel Counselling Service. To gain more public exposure, the Section encouraged frequent contact with the media.

By working closely with private-sector tourist accomodation representatives such as Resorts Ontario and the Ontario Private Campground Association, the Branch established a good base for over-all tourism promotion.

A new film entitled "In Search of a Perfect Campsite" was completed and a canoeing film was started.

Field staff made major strides in developing better relations with local tourism enterprises and improving community interest in the parks.

Operations and Development

The number of campers using Ontario Provincial Parks in 1979 was 1,355,733. These campers stayed a total of 3,259,752 nights. The number of provincial parks in operation remained at 128. Improvements to the capital plant, particularly to water sewage, shower installations, roads and electrical distribution systems, continued to be priority projects thoughout the park system.

Regional visitor services plans have been completed. Emphasis continued to be placed on developing self-guided facilities in the face of further program staff constraints.

A policy on hospitality and procedural guidelines, for staff training related to good customer service, was developed in 1979. Seasonal staff participated in the seminars arranged by the Ministry of Industry and Tourism's "We Treat You Royally" program. Special day-long seminars were conducted for all park superintendents.

Off-Season Use of Parks

In Bronte Creek and Wasaga Beach Provincial Parks, outdoor skating rinks with artificial ice were offered to the public.

A free publication, Winter Outdoors, again provided a condensed description of recreation opportunities in all provincial parks during the winter season.

Winter Trails

Through the Winter Trails Recreation Program, $500,000 was made available in the form of grants to assist trail clubs and Conservation Authorities with the grooming and maintenance of more than 14,100 km (8,813 miles) of snowmobile trails and 1,540 km (963 miles) of cross country ski trails. Work was started on a plan to co-ordinate the development and management of a provincial network of snowmobile trails. This will be done by the Parks and Recreational Areas Branch in co-operation with snowmobile clubs.

The Ministry maintained 620 km (388 miles) of cross-country ski trails and 1,540 km (963 miles) of snowmobile trails on Crown land.

Access Points

Approximately 1,400 access points with parking areas and boat launch ramps were maintained to provide access to lakes and rivers.

Interior Camping, Canoe Routes

During 1979, 73,961 people entered Algonquin, Quetico and Killarney Provincial Parks for interior canoe camping and hiking.

In 1979 regulations concerning the use of motor-powered boats in Quetico and Lake Superior Provincial Parks were amended to implement their respective Master Plans.

In Quetico motor boats have been restricted from all lakes. However, an exception was made for members of the Lac La Croix Guides Association in recognition of the Lac La Croix Indian Band's isolated location and its members' dependence on guiding for their livelihood. Members of the Guides Association may operate motor-powered boats with engine ratings not exceeding 10 horsepower on Quetico, Beaverhouse, Wolseley, Tanner, Minn and McAree Lakes and the Maligne River from Lac La Croix to Tanner Lake.

In Lake Superior Provincial Park the operation of motor-powered boats has been restricted to Sand Lake, where engines not exceeding 10 horsepower may be used, and Lake Superior where any engine may be used.

In total, the Ministry managed 24,140 km (15,000 miles) of canoe routes in provincial parks and on Crown land.

Opinion Poll

A brief survey was undertaken to ascertain opinions of Ontario residents regarding a number of issues related to provincial parks. Results will be utilized in policy and program development for provincial parks.

Park User Survey

A visitor survey program initiated in 1974 was continued in 1979 with surveys of day visitors in nine parks and campers in six parks.

Waterway Evaluation

In co-operation with Parks Canada, the Northeastern Region has completed a pilot inventory of the outdoor recreation and heritage potential of the French River. This was undertaken to assist in the development of an approach to waterway analysis that might eventually be used in support of a Canadian Heritage Waterways system. The French River was chosen because of its acknowledged attributes.

Nature Reserves

On March 26, 1979, a 'Nature Conservation Day' was staged to foster an appreciation of nature conservation in the government. The keynote address stressed co-operation between government and private agencies in the protection of natural areas.

The number of Nature Reserve Zones increased by 38 in

1979 with the approval of master plans for Lake Superior, Greenwater, Sandbanks and Pinery (five-year review) Provincial Parks. The additional area protected in these zones totalled 17,730 ha (43,810 acres).

Planning

Regional System Planning

During the year work continued on the Provincial Parks Systems Plan and completion was scheduled for 1981. Preliminary evaluations of existing parks and park reserves and estimates of needs (related to protection, recreation, heritage appreciation and tourism) have largely been completed in the eight regions.

Recreational Land Acquisitions

Work continued on the evaluation of future parkland with emphasis on increased recreational facilities for southern Ontario residents. During the year, 2366 ha (5,847 acres) were acquired for outdoor recreation purposes.

Master Planning

To date 24 master plans have been approved, 11 are pending final review and approval, and 31 others range between initial and advanced stages of completion. Approximately half the provincial parks have master plans completed or under way.

The first five-year reviews were completed for Algonquin and Pinery Provincial Parks and four other five-year reviews are under way.

Public participation continues to be an integral part of master planning for parks and for five-year reviews of park master plans.

Provincial Parks Council

The Provincial Parks Council submitted its fifth annual report in December, 1979. The Council's principal accomplishment in 1979 was the completion for the first five-year review of Algonquin Provincial Park Master Plan, based on extensive public participation obtained by the Council. Dr. George Priddle continued to serve as chairman of the 10-member Council.

Fisheries Branch

The objective of Fisheries Branch is to maintain and rehabilitate the fish populations of Ontario as a stable base upon which recreational, cultural and environmental benefits are provided to the people of this province.

Unfortunately the potential for fish production has continued to decline in many Ontario lakes and streams. A variety of stresses have been, and are, acting on fish populations to degrade certain fish communities, especially those in southern Ontario. The many stresses include the highly publicized impact of acid rain, over-harvesting, habitat degradation, and changes in water quality.

The decline comes at a time of increasing demand for fisheries resources by various groups. The result has been increased conflict between groups competing for a declining resource. To address these important problems, a long-term plan was prepared to identify future management strategies for the improvement of Ontario fisheries. This plan, the Strategic Plan for Ontario Fisheries (SPOF), received financial support from the Ontario government midway through 1979. Consequently 1979 was the year in which a series of steps were taken that will ultimately lead to the full implementation of the Strategic Plan.

It was under the umbrella framework of SPOF that programs were increased in scope and rechanneled to reflect new and exciting management directions. Major policy needs have been identified, and working groups set up to develop them. One of the first needs is to modernize the management and regulation of the commercial fishery.

In conjunction with the Canadian and United States governments and bordering states, agreement was reached on goals, objectives and strategies for the management of the Great Lakes. The result of these agreements will be the Strategic Great Lakes Management Plan in a form similar to SPOF.

To deal with overlaping responsibilities between this Ministry and the Ministry of the Environment, particularly in relation to water quality, a liaison committee has been set up to identify common goals, mandates and approaches to standards, research and enforcement.

Boating regulations continued to be co-ordinated by Fisheries Branch. Input for the development of new regulations is obtained from private citizens and agencies. Boating Regulations (1980) were printed and distributed to provincial and federal agencies and private interest groups. The provincial response to projects under the Small Craft Harbour Marina Policy Assistance Program continued to be co-ordinated by the Branch. Liaison was provided between the Federal Small Craft Harbour's Branch and the Provincial Interministerial Committee on Great Lakes Access.

Fish Culture

The Fish Culture Section is responsible for planning and co-ordinating production of eggs and young fish to be stocked in selected Ontario waters. During the year, 13.5 million eggs and 6.0 million fish were stocked. Forty-two per cent of the fish were released in the Great Lakes and their tributaries. All the remaining fish and eggs were planted in 1,100 inland waters. The eggs included those of brook trout, lake trout and walleye (yellow pickerel).

Approximately 23 per cent of the species stocked were salmonids, including aurora (<1%) brook trout (4%), lake trout (8%), rainbow trout (5%), splake (4%), coho salmon (1%), and chinook salmon (<1%). The remainder were maskinonge (8%), walleye (69%), and smallmouth bass (1%).

Maintenance of the fish culture data base was continued to keep track of production and distribution. A standard report format was developed and a monthly reporting system was established for the hatcheries.

Renovation of the main hatchery at Dorion was completed in 1979 and planning for the renovation of Hill Lake Hatchery continued.

An agreement between the Ministry and the University of Guelph permitted the continuation of disease diagnostic services and nutrition studies.

Disease monitoring of our own facilities continued. Three fish culture stations were disinfected to eradicate disease organisms.

The special projects that were initiated in 1977 were continued; these included studies of the feasibility of culturing white fish for the rehabilitation of Lake Simcoe and techniques for the advanced culture of walleye.

In 1979, with the new SPOF funding, two additional staff were hired — a production planning biologist and a fish health biologist. Feasibility studies were carried out for the construction of a substation at North Bay and for the reconstruction of the Tarentorus main station and/or construction of a substation.

An aerial thermographic survey of selected eastern Ontario watersheds was carried out as a part of a search for new hatchery sites. A study was conducted by an outside consulting firm to determine the feasibility of contracting hatchery fish production to the private sector. Construction of an experimental whitefish rearing facility at the Glenora Research Station began in 1979. Plans were developed for a search for new sources of wild lake trout eggs in North Central Region. Several sites were investigated and eggs taken.

Environmental Dynamics

The Environmental Dynamics Section is responsible for the development and implementation of policy that affects fish habitat and its management. Activities include inventory of lakes and streams, habitat protection and maintenance, contaminants in fish, acidification of natural waters, and fish habitat rehabilitation. The Section does not control projects in these areas; rather, the management of fish habitat is a responsibility of each district office.

Through its SPOF program, the Ministry is committed to prevent losses of fish habitat, and wherever practical to rehabilitate degraded areas with their fish populations.

In 1979 more than one-half million dollars were spent on repairing damaged fish habitat. Projects included work in streams and lakes of northern and southern Ontario in the interests of such species as brook, brown, rainbow and lake trout as well as walleye. In other areas, adult fish were trucked past dams blocking migration routes and released in spawning areas upstream. Rainbow trout were introduced into the artificial spawning channel on Cobourg Creek where successful reproduction occured.

Fishways, on dams blocking migrations, passed more than 10,000 adult rainbow trout in 1979. Construction began on the first-in-Canada fish lock on the Beaver River at Thornbury; testing and operation is expected to begin in April, 1980. This facility will allow rainbow trout into many miles of previously inaccessible spawning habitat.

In co-operation with the Ministry of the Environment, the Ministry has started a program to study the effects of acidic precipitation on fish and habitat. In 1979 research and development contracts were let with universities and consultants. More than 450 water samples from 250 waterbodies were collected to determine their ability to buffer acidic precipitation. More work in an expanded program will be undertaken in 1980.

The inventory of lakes and streams continued in 1979 when additional 350 km (217 miles) of streams and 500 lakes were surveyed. The lakes ranged in size from 72,000 ha to 170,000 ha (179,000 to 420,000 acres). This brings the eleven-

year total in this program to 10,000 lakes and 750 streams.

Some representatives of certain fish species continue to be contaminated with heavy metals, pesticides and other potentially hazardous chemicals. In 1979 approximately 10,000 fish from several hundred waters were collected for testing by the Ministry of the Environment to provide advice to anglers and assist International Joint Commission programs on the Great Lakes

Population Dynamics

The major function of the Population Dynamics Section is to improve the technical competence of field staff by providing advice and expertise and communicating the results of recent advances in fisheries science and management pertaining to fish community dynamics. Critical review of field reports is an essential component of this function. The Section participates in Lake Superior, Lake Huron, Lake Simcoe and Algonquin fisheries management committees.

Geographical reference atlases for lake trout and yellow pickerel lakes in Ontario were completed. A similar reference atlas for brook trout was initiated. The Section assisted in the selection of a suitable donor lake for natural rearing of a specific genetic strain of lake trout; this lake will serve as a pool from which eggs and young will be collected for stocking in Lake Simcoe when water quality has reached an acceptable level to permit rehabilitation. The Section organized a Fisheries Assessment Unit training workshop for about 100 field staff.

Fisheries Research

The Fisheries Research Section undertakes or arranges investigations to provide the basic understanding needed for optimum, scientific management of Ontario's fish resources. It carries out relevant research, publishes the results in internationally recognized scientific journals, and makes its specialized expertise available to all levels of the Ministry.

The multi-disciplinary Lakeshore Capacity Study, carried out over the past several years in close collaboration with the Ministries of Environment and Housing, is nearing completion. Results of the inquiry into the impacts of fishing by cottagers and others (as a consequence of development of Ontario's recreational lakes) are in the final editorial stages before becoming available for management application and publication. The impacts of other development activities (such as dredging, filling, weed removal, dock building and boating) on spawning, nursery and feeding grounds of important fish species are proving harder to evaluate although the study has clearly shown that critical areas, essential to maintenance of fish stocks, do exist.

The problem of acid rain and the often-associated heavy metal contamination, plaguing Ontario's recreational lakes in the middle north, is receiving attention. The Harkness Laboratory in Algonquin Provincial Park, in the centre of the vulnerable area, is collaborating with other Ministry staff in intensive studies of the exact nature and extent of the impacts of this new stress on the important and long-studied fish stocks of the area. Emphasis is on precise measurements of reductions in survival and reproductive success of lake trout, brook trout and smallmouth bass, and on defining exactly how they are brought about.

A capability is rapidly being developed to extend the studies to other elements of the biota. In support of this work, studies of the impacts of acid on the growth of fish are being carried out by scientists based at Maple. Studies of the toxicity of acid waters are being carried out by Sault Ste. Marie staff in work which is integrated with a federal study on the Turkey Lakes north of the Sault. And studies of the impacts of acid on the aquatic communities of small boreal lakes are being conducted north of Lake Superior. Research staff are active on the inter-ministerial committees formulating, implementing and auditing Ontario's attack on the acid rain problem.

The back-cross strain of hybrid splake, reported last year as offering promise for rehabilitating the depleted sports fisheries of Georgian Bay and Lake Huron, this spring enjoyed a spectacular and well publicized success in southern Georgian Bay. With the addition of a second planted year-class this spring, the Ministry anticipates having to cope with the pleasant problems of making a successful solution to a once-vexing problem more widely available. Moreover, the superiority of first-generation splake over either brook or lake trout, for the planting of small, barren lakes in the north, is now beyond dispute, and the confirmatory analyses will be ready for publication and application by management later this year.

The intensive evaluation of available genetic stocks of wild Ontario brook trout, lake trout and whitefish has been extended. Staff have been surprised by the major difference between whitefish from various waters which have been revealed by this work. The full meaning of these differences has yet to be evaluated but it seems a good bet that the success of efforts to use hatchery reared whitefish to rehabilitate depleted waters will be heavily dependant on using the right strain in the right place.

Papers presenting Ministry results to the coming international Stock Concept Symposium, to be presented at the Nottawasaga Inn later this fall under the auspices of the Great Lakes Fishery Commission, will provide an opportunity to extend the analysis and interpretation in company with a distinguished group of experts from the British Isles, Scandinavia and Russia as well as the United States and Canada.

Special efforts continue to be made to analyse backlogs of information by machine data processing facilities at Maple and at the field research stations. Excellent progress has been made in dealing with the 20 years of experimental material accumulated from the splake program and that phase of research is now essentially complete.

A major paper, integrating the Ministry's research on factors affecting year-class strength in smallmouth bass, also emerged this year from this work and re-united in its authorship former employees now with the University of Toronto and the federal government, as well as Ministry staff, to recapture an earlier investment. Consideration is currently being given to improving the computing capacity available to the research group as part of a larger evaluation of the "information system" needs of fisheries staff throughout the Province.

In collecting data, fisheries scientists often obtain information of immediate use to local district staff and they may advise local management staff. They also act as technical representatives of the Ministry on interministerial and federal-provincial committees, the International Joint Commission for Boundary Waters and the Great Lakes Fishery Commission.

Client Services

The Client Services Section is responsible for the formulation of provincial policy and procedure, setting provincial work plan and program priorities, program evaluation audit and staff training, and the provision of special services in those areas which fall outside the scope of the other sections. These include provision of automatic data processing and programming based on the provincial fisheries information system, public involvement, private land extension, administration of legislation, regulations and enforcement, allocation guidelines, fisheries planning, developing economics on a cultural and biological rationale for fisheries management and allocation strategies, administering Fisheries Industrial Development grants and the Freight Equalization Assistance Program, and

developing sociological rationale and expertise for the implementation of management strategy.

Among the areas for which Client Services is responsible is the licensing and administration of commercial fisheries, including both food fish and bait fish. The number of bait fish licences declined slightly in 1979. The number of commercial fishing licences issued in the past five years has remained relatively constant but the capital investment has nearly doubled from $19 million in 1974 to $34 million in 1979.

The over-all commercial fish harvest declined slightly in 1979 but due to escalating prices the total value of the harvest increased to almost $26 million. As in previous years, yellow perch remained the dominant species, accounting for 24 per cent of the total landings and 54 per cent of the total value.

The commercial landings of individual species remained relatively constant from 1978 to 1979 but some exceptions were evidenced. The traumatic decline in white perch harvest (down 79%) and less extreme declines in burbot (down 26%) and lake whitefish (down 24%) were recorded. Increases in total harvest were observed for five species — Pacific salmon (up 88%), crappie (up 47%), carp (up 37%), yellow perch (up 23%) and yellow pickerel (up 19%).

The fishery in Lake Erie continued to produce the largest harvest in Ontario accounting for more than 70 per cent of both the provincial harvest and its dollar value.

Under the Federal Fisheries Industry Development Program, a study of fish populations in the James Bay area was made to determine if there was a potential for commercial harvest. A study of the potential harvest of bait fish from ponds and the types of equipment necessary was conducted. Commercial fishermen participated by testing trap and hoop nets. A stock assessment of lake whitefish was conducted in Lake Superior to determine the year-class strength and, hence, the potential for further utilization. Lake Huron and Lake Erie populations of yellow perch were estimated.

On Lake Erie, methods for setting new quotas on the commercial harvest were discussed with commercial fishermen. On Lake Ontario, quotas were set on walleye, lake whitefish, lake herring and American eel. Negotiations were initiated on quotas for Lake Nipigon. Quotas on Lake Superior were held in abeyance until certain issues have been more fully addressed.

For the fourth successive year the number of angling licences sold to non-residents increased slightly to reach approximately 674,000.

Two additional staff were added in 1979 to assist in the development of fisheries management programs — a public involvement co-ordinator and a fisheries economist.

Preparations were made for contracting of a major study on the future development of the Ontario Fisheries Information System (OFIS), a computer based information system which provides management information for fisheries biologists. The study is to assist in the definition and selection of options for the future development of OFIS.

Land Use Co-ordination Branch

The Land Use Planning, Special Projects, and Policy and Planning Sections, which comprise the Branch, continued to co-ordinate Ministry land use planning. They assisted other ministries and planning agencies, such as municipalities, with land use plans. The Branch updated environmental assessment procedures for Ministry undertakings and co-ordinated Ministry environmental assessment responsibilities.

Strategic Land Use Plan

A strategic land use plan is being prepared for each of the Ministry of Natural Resources' planning areas — northwestern Ontario, northeastern Ontario and southern Ontario. In southern Ontario the plan is called the Co-ordinated Program Strategy.

The purpose of the strategic plans is to provide an over-all framework within which land use plan are to be preparated for each administrative district. When district plans are completed these will provide the primary means of co-ordinating all Ministry of Natural Resources programs which require land or water.

The planning process for strategic land use plans is divided into three basic phases: (1) collection and analysis of background information; (2) formulation of policy; and (3) preparation of the plan. Progress in the planning regions is as follows.

Northwestern Ontario. The draft plan is completed and approved and will be released as soon as copies are available from the printers.

Northeastern Ontario. The draft plan is completed and approved and will be released to the public after printing.

Southern Ontario. A draft co-ordinated program strategy has been completed for review by the planning region staff.

District Land Use Planning

The three regional Strategic Land Use Plans will provide policy direction for more detailed land use plans which are being prepared for each of the Ministry's 48 districts. District land use plans follow the same three-phase planning process. All districts began the collection and analysis of background information during the past year. Completion of the district land use plans is targeted for March 31, 1983.

The Ministry'a West Patricia Land Use Plan, occasioned by the proposed licensing of new Crown timber limits north of Dryden to Reed Paper Ltd., will be a composite of the Red Lake, Sioux Lookout and Geraldton District Land Use Plans.

The Branch completed revision of the Land Use Planning Guidelines which were originally prepared in 1974. While these guidelines have been specifically developed for the purpose of preparing Ministry district land use plans, they can also be used as a general guide for all levels of Ministry land use planning. The approved Guidelines will be released in 1980-81.

A brochure titled "Land Use Planning by the Ontario Ministry of Natural Resources" was prepared for distribution to the public.

Plan Input and Review

The land and water base for meeting the Province's long-term natural resource needs must not be adversely affected by the actions of others. Seeking to assist and influence these actions through input to, and review of, other agencies' plans is, therefore, an essential activity of the Ministry.

Much of the Ministry's plan input and review activity continues to be directed at municipal planning and at private development proposals, both of which fall under The Planning Act. Planning assistance and review is also carried out with other other provincial and federal ministries and agencies. During the year Ministry field offices continued to provide input into, and review of, other agencies' proposals, hydro facilities, highways and pipelines on a local basis.

The Plan Input and Review Handbook, designed to guide field staff and promote consistency throughout the Ministry, was finalized and distributed to field offices. Refinement of policies and procedures in this area is an ongoing activity. The Branch audited four Regions in the plan review activity and two Regions for their involvement in major plan inputs to help ensure a high level of performance.

Major plan inputs by the Branch was directed towards the CORTS reports and the Porter Commission on Electric Power Planning. The Branch co-ordinated the Ministry's review of the White Paper on The Planning Act and the draft Planning Act. The Branch continued its representation on the Hazard Land Implementation Committee which is preparing procedural guidelines for the implementation of the Flood Plain Criteria policies approved this year by the Cabinet of Ontario.

Policy Planning

The co-ordination of policy and planning for the Lands and Waters Group has been assigned to this Branch. The integration of policy and program development across the Group is regarded as an essential prerequisite for more effective land and water management. The development of an umbrella Lands and Waters policy statement is a first priority in this task. Other important aspects include development of policy on specific topics related to land use and land and water management; the recommending of Program priorities; and the co-ordination of proposed development activities within the Group.

Environmental Assessment

The Branch continued to develop and assist in the development of class environmental assessment for a number of undertakings. The task of continually refining the Ministry's responsibility under The Environmental Assessment Act was also an important part of the Branch activity.

Land Use Related Projects

The Branch continued to provide Ministry co-ordination for two land use related projects, The Reed Proposal and The Royal Commission on the Northern Environment. It also continued to co-ordinate the Ministry's participation in the Lakeshore Capacity Study.

The Ministry is investigating the feasibility of updating (plus preparation where necessary) and maintaining a land and water inventory for the Province. The Branch has participated with Environment Canada in the application of an ecological (bio-physical) land classification system that it is developing.

The Ministry provided a comprehensive review of policy and planning reports prepared for the Rideau-Trent-Severn Corridor by the CORTS Secretariat. It continued to review the planning reports prepared by the Niagara Escarpment Commission and will monitor the hearings to take place in 1980-81.

Surveys and Mapping Branch

Surveying Services

Surveying Services is one of three divisions within the Branch; it encompasses Surveys and Geographical Referencing.

Surveys

Surveys examines plans of survey for alienation of public land, arranges for private sector legal surveys required for Ministry administrative purposes, and maintains custody of plans and field notes of original Crown surveys and provides expert opinion on their interpretation.

The Section administers agreements with municipalities for the performance of co-ordinate surveys and prepares instructions for municipal and Crown resurveys under The Surveys Act, examines the returns of survey, arranges public hearings and prepares the surveys for confirmation.

The program of township boundary resurveys, carried out by surveyors in private practice under instructions, continued with 325 miles completed, compared to 285 in the previous year.

A total of 243 cottage lots were surveyed in plans of subdivision in the northern administrative regions, compared to 454 last year.

Survey service to regions and other branches continued to be provided as requested.

Two agreements for the performance of control surveys and installation of monuments were in effect with municipalities. No new agreements are under negotiation.

Geographical Referencing

This Section plays a lead role in the development and promotion of geographical referencing standards. In 1979-80 its activities were primarily focused on the development of a pilot geographical referencing system through an agreement with the University of Guelph. The first phase of this development is scheduled for completion June 30, 1980.

The Interministerial Committee on Geographical Referencing (ICOGR) continued to promote and encourage the use of geographical referencing standards throughout government. ICOGR played a major role in determining the content of the specifications included in the agreement between the Ministry and the University of Guelph.

Specifications and Guidelines for horizontal control surveys in Ontario were published.

A computer program (MACSPLOT) was developed for the purpose of automatically plotting horizontal control survey data.

The data input phase of the provincial horizontal control survey data bank (COSINE) was completed and the data input format finalized. A variety of enhancements were incorporated into COSINE which will, upon its completion, expedite the readjustment of secondary control survey networks in Ontario. The data for approximately 2,000 horizontal control survey stations were compiled and formatted for input into COSINE.

Mapping Services

Cartography, Drafting Services, Nomenclature and Ontario Basic Mapping are brought together under Mapping Services which has the responsibility for mapping support to all Ministry programs. Efforts to coordinate the mapping activities of the Ontario Government, its agencies and municipalities is also part of its responsibility.

Cartography

Cartography Section generates the Provincial and Territorial Series of maps and handles the Ministry's major map brochures and allied colored graphics. Its greatest workload lies in the preparation of a variety of multi-coloured lithographed maps for the Ontario Geological Survey and the Outdoor Recreation Group of the Ministry. Important clients include other ministries.

Some highlights in 1979 included the completion of Phase I of The Northern Ontario Engineering Geology Terrain Study (55 maps), and a revision of the Geological Highway Map of Southern Ontario. Production commenced on a similar map for northern Ontario.

Field base maps for the Ontario Geological Survey increased 10 per cent over the 1978 production which was itself 400 per cent of a normal field season demand. It is planned to extend coverage of the Provincial Series in the Red Lake, Lake St. Joseph and Moosonee areas. Three maps are currently in production and a further seven are scheduled.

Continuing assistance was provided to the Ontario Basic Mapping program with photo-mechanical and other support services and through secondment of staff.

Basic Mapping

The Basic Mapping Section administers the Ontario Basic Mapping Program which will provide a system of orderly topographic mapping, covering Ontario as scales suitable for provincial and municipal needs, and the Regional Priority Mapping Program, intended to accelerate basic mapping in designated areas.

Ontario Basic Mapping. Ontario will be covered at 1:20 000 with 10 m contours in northern areas and 1:10 000 with 5 m contours in southern areas. Urban areas of the Province will be mapped at 1:2000 with 1 m contours.

The program is proceeding in two stages — start-up for the first three years and then main production for ten years, by which time the Province will be adequately mapped.

Surveying and mapping is carried out by private industry; the Ministry supervises the program.

During 1979 the Section entered the second year of the start-up phase, simultaneously building up the staff and undertaking a considerable amount of mapping according to priority guidelines furnished by an earlier ad hoc inter-Ministry committee.

A standing Priorities Committee, representing ten ministries, was convened and at year-end was in the process of establishing ongoing provincial basic mapping priorities.

Medium-scale mapping at a scale of 1:10 000 continued in the areas from London to Niagara Falls; 103 maps were completed. Mapping control and air photography was installed in eastern Ontario, enabling planimetric mapping to be commenced in the Brockville-to-Hawkesbury area; 154 maps were completed. Nine 1:20 000 scale photomaps were completed in the Moosonee areas. And 1:2000 large-scale mapping of 25 communities in southern Ontario was commenced and is scheduled for completion in April 1981.

Regional Priority Mapping

The Ministry of Northern Affairs, under the Regional Priority Program, continued to provide funds for mapping in designated northern areas. Thirty-nine 1:20 000 scale maps were completed in the Iron Bridge-to-Espanola area. The production of 50 maps marked the commencement of mapping in the Coniston-to-Mattawa area. Large scale mapping (1:2000) of 38 communities was completed and 20 others were started, 18 scheduled for completion by April, 1981, and two by April, 1982.

The Section continued to map areas near nuclear power facilities with funds specially designated for the purpose. This mapping is provided as a contingency measure against nuclear or other emergencies. Eighty-seven 1:10 000 scale maps have been prepared to date and more are planned

Drafting Services

Drafting Services Section provides a wide variety of drafting, mapping and graphic support services to Ministry programs with some minor support to other ministries that lack this capability. Its production is mostly in black and white.

Its major series of maps and plans are essentially graphic indexes to the status of land (most Crown land) showing the disposition of surface and sub-surface real property rights, or illustrating forest resources, geological and mineral resources, lake resources, land use capability and conservation matters. Prints are available through the Public Service Centre.

Major production was as follows.

Forest Resources Inventory Base Mapping — 40,145 km² (15,500 sq.mi.)
Forest Stand Mapping — 51,800 km² (20,000 sq.mi.)
Mining Claim and Township plans — new bases 40, revised plans 5,037
Preliminary Geological Maps — 158
Miscellaneous charts, tables, graphics — 1,163.

Nomenclature

Nomenclature Section maintains the official record of geographical names of features such as natural lakes, rivers and islands and unincorporated populated places in Ontario. It provides services to the Ontario Geographic Names Board by maintaining records of OGNB recommendations to the Minister and of ministerial approvals. It also assists with arrangements for Board meetings and with Board correspondence.

It conducts toponymic surveys, submitting its findings for OGNB consideration, and furnishes nomenclature information to government agencies and the public as required.

During 1979 it conducted toponymic surveys in Owen Sound, Collingwood, Niagara, Tillsonburg, Cambridge, Eastern Ontario, Dryden, Norfolk, East Niagara, Simcoe, Aylmer, Long Point, Metro Toronto and Sudbury-Killarney areas.

Ontario Centre for Remote Sensing

The Ontario Centre for Remote Sensing conducts projects applying the analysis of aerial photography, other forms of aerial imagery and satellite data to resource management fields. Projects are undertaken in co-operation with ministries, primarily, but also with universities and the private sector. Through these projects and in-house research programs, new methodologies of remote sensing application are developed, and the practical usefulness of new forms of remote sensing data investigated. In 1979-80 more than 60 research and application projects were undertaken.

Field work was completed in support of the biophysical classification of the Hudson Bay-James Bay Lowlands in the summer of 1979. A procedure for map production using visual, analogue and digital analysis of satellite data, together with a computer-linked color plotting system, was developed

Map and report preparation for the surficial geology mapping of northern Ontario continued.

The Centre undertook a pilot project to determine the extent to which the digital analysis of Landsat data could fulfil the requirements of the Ministry of Agriculture and Food for periodic agricultural land-use updates. A trial application project to employ digitally-analyzed Landsat data for land use and land cover type mapping was begun. The methodology has potential application over the entire Province.

Testing of the aerial photographic methodology for the assessment of forest regeneration success continued, in preparation for trial application in six Ministry districts in 1980-81.

At the request of the Aviation and Fire Management Centre, maps of cutovers that occured between 1972 and 1978 for the entire province were produced from the visual interpretation of Landsat imagery, to provide the basis for an inventory of potential fire hazard and prescribed-burn sites.

The Centre continued the development of an aerial forest sampling procedure. The programs to detect forest damage by disease and infestation anso continued.

Tests of two metric aerial photographic scales 1:10,000 and 1:20,000, were undertaken for a study site in Southern Ontario to determine the interpretability of each scale for forest inventory parameters. When testing is complete in 1980-81 for a northern Ontario site as well, the OCRS will advise the Forest Resources Inventory as to metric conversion.

The OCRS performed a test project in the mapping of forest types north of 52 °N latitude, the present northern limit of Ontario's forest inventory program, by the digital analysis of satellite data. Results were within 84 to 94 per cent of the results obtained by standard airphoto interpretation for the test area, depending on the forest type.

The evaluation of airborne synthetic-aperture radar imagery for forest regeneration assessment and structural geological mapping was continued, and the evaluation of satellite-borne radar data for geological applications undertaken. Preparation of a guidebook in the interpretation of radar imagery for use in several different disciplines was begun.

The OCRS co-ordinated the acquisition of aerial thermography and obtained support aerial photography of Kingston, St. Catharines and Cornwall. The Centre participated in energy-conservation clinics conducted by the Ministry of Energy in these cities. Thermal and photographic coverage was also obtained of Belleville and Pembroke. Enlargements of thermography obtained in 1978 were prepared for managers of selected commercial, industrial and institutional buildings in Peterborough, and interpretation instructions supplied.

Aerial thermography was also applied to the mapping of hot-water discharge from the Pickering Generating Station, and to the location of groundwater springs for the selection of fish-hatchery sites.

The OCRS undertook the development of a technique for the quantitative mapping a chlorophyll in lakes by digitizing aerial photography.

In co-operation with the Hydrometeorology Unit of the Conservation Authorities and Water Management Branch, the Centre began a project to investigate the use of Lansat satellite imagery to provide data on the areal extent of snow cover as input to flood forecasting. A test was also made of the use of airborne gamma ray spectrometry for gathering snow water-equivalent data.

The Centre commissioned software development to increase the capability of its Norpak PDP 11/34 digital analysis system, and purchased an Applicon Colour Plotting System which produces annotated colored maps at a variety of scales, directly from the digital image analyzer.

A Daedalus thermal infrared linescanner was purchased for OCRS use by the Ministry of Energy to meet the increasing demand for thermographic coverage of building heat loss, and for research into natural-resource-related applications of airborne thermography. OCRS staff completed an intensive training course in the use of the Daedalus system. To accomodate the scanner, The OCRS arranged for the lease of a Navajo Chieftain aircraft with two sensor hatches.

A review of the district supplementary aerial photography (SAP) operations was undertaken, and the Centre's SAP training procedure adapted to field requirements. The difficulty of aircraft acquisition for field SAP work was communicated to regional directors, and plans were made for a

study of the standardization of SAP equipment province-wide.

A comprehensive program of remote sensing technology transfer, to government, industry and universities simultaneously, began in 1979-80. Seminars and workshops were initiated for government profesionals and managers; private industry was offered training assistance; and universities were offered several types of assistance with training students in practical remote sensing application, and with research and application projects. All three sectors expressed interest in participation in the program. The technology-transfer program will be an on-going activity of the Centre.

The OCRS conducted nine training courses in 1979-80. Three introductory seminars in remote sensing application were given for professional staff, one seminar for managerial staff, and one specialized course for fire protection personnel. Two courses in photo interpretation and remote sensing for forestry conducted for Ministry personnel and staff of private consulting firms, one concentrating on Great Lakes–St. Lawrence forest conditions and the other on boreal forest conditions. Courses on the field identification of soils and soils mapping were presented.

The OCRS was co-organizer of, and host to, the Remote Sensing Symposium of the Canada–Ontario Joint Forest Research Committee.

Through the Canada-Germany Scientific Exchange Program of the federal Department of External Affairs and the Ministry of Intergovernmental Affairs, The OCRS was host to a scientist from West Germany who took part in field work for the biophysical classification of the Hudson Bay–James Bay Lowlands.

Advice and assistance in the use of remote sensing imagery and methods of analysis were provided to many hundred of visitors to the Centre. Fifteen scientific papers were delivered at national and international conferences. International visitors to the Centre included the national remote sensing co-ordinators of Peru and Venezuela, scientists from England, Norway, Finland, India and Japan, and a group of geologists and engineers from the People's Republic of China.

Land Management Branch

Crown lands, including mining lands, within the Province are managed by the Branch. Its responsibilities include the administration and disposition of public and mining lands, acquisition of private lands, issuance of Crown title documents, and co-ordination of the Ministry's resource access program.

Public Lands

The Public Lands Section has two primary functions: management of the Province's 90 million ha (222 million acres) of Crown land outside provinvial parks, and disposition of rights in public lands and waters.

Land management includes control of uses and users (75 million "user occasions" per year for recreation alone); the operation of garbage and litter control systems; the control of unauthorized occupations; the overseeing of construction of roads, pipelines, etc., on Crown land; control of development on private lands in restricted areas; and lake planning.

Land disposition encompasses the granting of rights (ranging from freehold to agreements for use of waters for power generation) to a wide variety of clients — individuals, corporations, other governments and government agencies. It includes the follow-up administration of transfers, renewals, cancellations, etc., of tenure documents including leases in provincial parks.

The Section co-ordinates land-related training of staff and the provisions of information and advice on public lands to the general public.

Section programs are implemented by field office staff. The main office group formulates policy, directs field offices through policy and procedure directives, monitors field performance through periodic field audits, and provides technical guidance to field offices.

Commencing in 1979, Crown cottage lots, offered by lease only in recent years, were made available for purchase by eligible applicants including Canadian corporations. Lessees of existing cottage lots in subdivisions are allowed to obtain freehold title to their lots at market value prices.

Mining Lands

Under The Mining Act, the Mining Lands Section is authorized to manage Crown mining lands as follows:

(a) Setting policy, formulation and interpretation of statutes, and procedure directives;
(b) Auditing Mining Recorder's offices;
(c) Auditing regional programs relating to all quarry permits and The Beach Protection Act Licences issued; and
(d) Assessing all geophysical, geological and other technical survey reports submitted for assessment work.

Under The Beach Protection Act, the Section licenses the removal of sand or gravel from beaches, banks or waters of all lakes and streams and regularly monitors such operations. These licences cover removals by private individuals as well as large commercial extractions which provide considerable revenue in the form of royalties. Liaison with the Ministry of the Environment and field staff specialists ensures that erosion or significant damage to the fish population or local ecology is prevented. Municipalities operating for municipal purposes are exempt from the Ministry Licensing and supervision.

Land Acquisition

The purchase of private lands required for various Ministry programs is a major function of Land Acquisition Section. This entails co-ordinating priorities for acquisition, determining budget requirements, overseeing and approving each purchase, and maintaining a computerized statistical control and data bank.

Around 257,481 ha (636,250 acres) have been acquired since the Section's formation in 1962 — 2,480 ha (6,130 acres) during the past year.

Newly acquired properties are managed on an interim basis to generate revenue and protect them for their eventual Ministry use. Low-priority lands are sold or exchanged for other properties more critical to Ministry needs. The Section is responsible for providing market-value appraisals of Crown land for dispositions to ensure a consistent market-value basis Province-wide.

Titles

The Titles Section prepares and maintains a written registry of the legal documents required for the ultimate disposition of Crown lands. It is responsible for the maintenance of the Ministry filing system that is used in conjunction with the registry for the administration of the Crown land base of the Province. A program to computerize the indexes of these land parcels, their survey plans and related file records has begun and is targetted for completion in 1984.

The Section levies mining acreage tax and carries out procedures necessary to effect forfeiture to the Crown of alienated mining lands when the owners default

Resource Access

Co-ordination and consultation were provided for the construction and maintenance of forest access roads, and assistance is given on an ongoing basis to the Northern Ontario Resource Transportation Committee secretariat.

A total of 8,919 km (5,542 miles) of forest access, Ministry service, public transport and agreement forest roads were maintained

The Ministry shared, by agreement, the cost involved in maintaining 698 km (434 miles) of private forest roads constructed by industry.

The Ministry of Northern Affairs provided funding for construction and reconstruction of roads in southern Ontario, resulting in the completion of 73 miles.

The Ministry of Northern Affairs provided funding for the construction and reconstruction of the following in support of Ministry programs in northern Ontario.

1. Normal Program plus Regional Priority Budget
   Forest access roads and bridges ..... 223 miles
2. Northern Ontario Resources Transportation Committee
   (a) Forest access roads, bridges and other projects ..... 84 miles
   (b) Winter roads (Round Lake) ..... 35 miles
   (c) Snowmobile trails ..... 100 miles
3. Forest Management Subsidiary Agreement (shared with Federal Government)
   Bridges 1

Conservation Authorities and Water Management Branch

The newly-created Coservation Authorities and Water Management Branch combines the Former Engineering Services and Conservation Authorities Branches. The organizational change allows a strong water management thrust within the Conservation Authorities Program to be linked with water management responsibilities of the Ministry and concentrates staff forces towards comprehensive water management.

The Branch is responsible for water policy and planning systems development for Conservation Authorities and areas not covered by Conservation Authorities. In addition, funding assistance, management and planning assistance are provided to Conservation Authorities as well as the provision of technical duties in the management of planning of Ontario's public waters.

Conservation Authorities

The 39 Conservation Authorities cover most of Ontario south of the Precambrian Shield as well as sections of northern Ontario around North Bay, Sault Ste. Marie, Sudbury, Timmins and Thunder Bay. They undertake a wide variety of programs to further the conservation, restoration, development and management of the renewable natural resources of their watersheds.

A Conservation Authority is formed as a result of a resolution from two or more municipal councils that petition the Minister of Natural Resources to convene a meeting for that purpose. If the vote of the municipal representatives is favorable, the Authority is established by an Order-in-Council. In general, the Authority's boundaries are then defined on a watershed basis. They may include a single watershed, such as the Grand River system, or a number of smaller and adjacent watersheds, such as the Cataraqui Region.

The Kawartha Region Conservation Authority was recently formed through the above-captioned process and the Ministry is presently working with the newly-created Conservation Authority to develop a long-term program.

The Conservation Authorites Act ensures a provincial-municipal arrangement. The membership of each Authority includes representatives of all municipalities situated wholly or partially within the watershed, and up to three members appointed by the Province. Consequently, the initiative and sense of reponsibility of the local communities are combined with the technical and financial resources of the Province to protect and develop the watersheds of Ontario.

Conservation Authorities place particular emphasis on water and related land management. They are also involved with auxiliary programs oriented to lands use, forestry, fish and wildlife, outdoor recreation and conservation education.

All programs undertaken by the Authorities must have the approval of the Minister of Natural Resources. Each program involves a wide variety of resource management projects that receive financial assistance. Provincial grants are provided through the branch. In some water management projects, the Federal Government may also participate.

The Authority raises its share of the funding by levying its member municipalities and by receiving aid from other sources.

At present 20 Authorities employ a general manager or director of operations to supervise their programs under the direction of a chairman. Resources managers are supplied by the Province in 19 Authorities, including three instances where the services of a manager are shared by two Authorities.

Conservation Authorities relate to the Ministry's field organization at the regional level. Four regions have program supervisors to assist the Authorities in planning and implementing their resource management programs.

The grants to the Conservation Authorities totalled $30,158,072.14, during the fiscal year.

Administration

The Branch moved forward with a number of policies and programs. The Report of the Working Group on the Mandate and Role of Conservation Authorities was reviewed in depth by municipal organizations and it is anticipated they will solicit government approval of the policy. A new manual of Policy and Procedures for Conservation Authorities has been created and will be instituted shortly.

This year a comprehensive statement on flood plain criteria relating to Conservation Authorities and the Ministry was put forward and received government approval. The policy statement enables each public agency and private individual to clearly understand provincial standards regarding flood susceptibility and flood risk.

Watershed planning studies are presently underway in most Conservation Authorities, with studies in the Grand River and Metropolitan Toronto and Region Conservation Authorities expected to be completed soon.

Conservation Authorities have increased their emphasis on land management programs related to PLUARG (Pollution from Land-Use Activities Reference Group) concerns. For example, the Upper Thames River C.A. recently developed private and public land use demonstration programs in the predominantly agricultural Stratford-Avon watershed.

The environmental strategy for the Lake Simcoe–Couchiching Basin demonstrated the role of the South Lake Simcoe Conservation Authority in inter-agency environmental management. An implementation plan is being prepared.

The biennial tour of Conservation Authorities involved the staff and members of the Authorities in Southwestern Region. The tour provided a perspective on activities in the long Point Region, Upper Thames River and Grand River Conservation

Water and Related Land Management

Programs within Water and Related Land Management Section relate to water management and flood control, and include projects such as flood plain mapping, environmental assessment, dams, channel improvements, erosion control structures and water quality monitoring. Grants to the Authorities under these programs totalled $20,466,352.85 during the year.

A total of 1430 ha (3576 acres) of land was purchased by the Authorities in 1978 for water and related land management, bringing the total land holdings to 85,342 ha (213,357 acres).

Twenty-four of the Authorities protect the residents of some 215 municipalities through the implementation of approved flood plain regulations. Water quality is monitored by 320 stations within the Authorities.

Conservation Authorities assisted private land owners by carrying out reforestation programs on 570 properties, streambank and gully erosion programs on 39 properties, conservation plans on 17 properties, and other private lands assistance on 234 properties.

Program Highlights

The Lakehead Region C.A. has received approval for the Neebing–McIntyre Flood Control Measures Project which will provide flood relief to the city of Thunder Bay.

The Nickel District C.A. completed construction on the Nickeldale Dam and Reservoir in 1979. Nickeldale Dam is

fourth in a series of four dams that were recommended in the Conservation Authority Conservation Report.

Construction of the W. Darcy McKeough Diversion dam and channel, being undertaken by the St. Clair Region C.A., saw the completion of contracts 1 & 2 in 1979. Contracts 3 & 4 should be finished by January, 1981, with the final completion anticipated in 1982.

The Grand River C.A. proceeded with a number of flood control works including a continuation of the Caledonia Dam, and the undertaking of major flood control studies in Brantford, channel improvement in Cambridge, and bank stabilization in New Hamburg.

Construction on the Bennett-West Davignon Diversion project by the Sault Ste. Marie Region C.A. was completed in August, 1979.

The Credit Valley C.A. undertook the replacement of a railway culvert on Sheridan Creek to relieve flooding problems in Mississauga.

A large water and land management project was undertaken by the Metro Toronto and Region C.A. in 1979. The study included erosion and bank stabilization projects as well as several flood control projects.

The Otonabee Region C.A. continued a land acquisition project on the floodplain in Peterborough.

The South Lake Simcoe C.A. undertook a large floodplain mapping project under the Canada/Ontario Flood Damage Reduction Program. The Authority also carried out channelization construction work in Newmarket.

The Grand River Basin Study, a co-operative study involving various provincial Ministries and the Grand River C.A., is progressing on schedule. The study will be completed in the fall of 1980.

The Grand River C.A.'s Environmental Assessment of Water Control Structures in the Grand River Basin was completed and submitted to the Government for review.

The Raisin Region C.A. continued construction of a drainage channel and a stormwater retention pond to alleviate flooding on the Fly Creek Channel in Cornwall.

In 1979 the Maitland Valley C.A. received approval to undertake a thermography study. The five-year program will employ remote sensing to investigate 17 selected areas.

The Upper Thames River C.A. completed one-third of its environmental assessment of the Glengowan Dam & Reservoir in 1980 with completion anticipated in 1981. The Authority's private land extension program was enhanced through additions in funding and manpower to meet the increased demand from private landowners.

In March, 1979, several dykes along the lower Thames River were breached, resulting in $2 million damage. The subsequent "Report of the Dower Township Flood Control Committee" recommended, among other things, the preparation of a comprehensive ice management plan for the Thames River. In 1979 approval was given to the Lower Thames Valley C.A. to undertake a $20,000 study to prepare an assessment of alternatives for the prediction, control and prevention of flooding due to ice jams on the lower Thames River.

The Lower Thames Valley C.A. began phase 5 of the Indian McGregor Creek Channel Improvement Program in 1979 to relieve flooding in the South Chatham area, completion is expected in 1980

Following severe flooding in Field and on the shores of Lake Nipissing in 1979, the Province and the Federal Government authorized a stdy of the Sturgeon River/Lake Nipissing/French River system. The study will identify flooding problems and develop alternatives for coping with the problems. It is expected to be completed in December, 1980

Conservation and Recreation Land Management

This program includes projects related to land acquisition for conservations areas, development and landscape protection, reforestation and woodlot management, outdoor recreation, information and outdoor education, fish and wildlife inventories, and pollution abatement. Grants to Authorities under this program totalled $4,934,736.46 of which $1,530,000.00 went towards the Lake Ontario Waterfront Projects.

A total of 823 ha (2,057 acres) of property was purchased by the Authorities in 1978 for conservation and recreation land management, bringing the total land holdings to 23,320 ha (58,016 acres). Of this total, 8390 ha (20,711 acres) are set aside as recreation areas. During the year the recreation areas were used by an estimated 3,808,476 people for day use and 915,038 for overnight use. Conservation Authorities provided 2,407 serviced and 5,114 unserviced campsites.

Trails operated in the Conservation areas in 1978 comprised 896 km (556 mi.) hiking trails, 123 km (76 mi.) equestrian trails, 687 km (427 mi.), cross-country skiing and snowshoeing trails, and 485 km (301 mi.) motorized vehicle trails.

Program Highlights

The Lakehead Region C.A. was given approval to develop a plan for the Silver Harbour Conservation Area to provide public access to Lake Superior.

The Halton Region and Hamilton Region Authorities have continued to acquire land along the Burlington Beach strip.

The Crowe Valley C.A. acquired a new administrative building in Marmora, overlooking in Marmora Dam.

Approval for the Backus Conservation Area Master Plan was received by the Long Point Region Conservation Area. The future development will include campground expansion, construction of trails, wildlife and woodlot management, and a small amount of land acquisition.

The Sauble Valley C.A. received approval for the Glen Management Conservation Area. Future development includes trail expansion, wildlife habitat improvement, reforestation, streambank stabilization, and some land acquisition.

The Saugeen Valley C.A. received approval for the Saugeen Bluffs Conservation Area Master Plan in 1980. The area is currently popular for day use and camping, as well as the Authority's maple syrup demonstrations. New facilities will include washrooms, boat launch and campground servicing.

Youth Programs

Under the Experience '79 Program the 1,332 students hired by the Branch and the Conservation Authorities gained valuable insight into resources management by undertaking projects such as the development of nature trails in conservation areas, restorations of historical sites, removal of debris from water courses, construction of riverbank retaining walls, and compilation of wildlife inventories. Total grants under this program were $1,759,500.00.

The 1979 Junior Conservationist Award Program provided employment for 35 participants and six leaders. The program, which is administrated by the Branch, is a combined working and learning experience in conservation and resource management. Its purpose is to stimulate, through an active summer program, a continuing interest in the wise management of our natural environment. Host Conservation Authorities in 1979 included Halton Region, Metro Toronto and Region, Mattagami Region, Saugeen Valley, and Maitland Valley. Total cost of the program was $69,549.

Public Waters

Pre-Engineering and Design

Projects included design of bridges over the Namakan, Little Pic and Eagle Head Rivers and liaison with the engineering consultant for a suspension bridge over Ouimet Canyon.

Investigations were carried out and designs were prepared for Pickle Lake, L'Amable Lake and Peshu Lake dams, boat docks at Sioux Lookout, a spawning channel at Westport, a fish pass at the Julian Reed Dam, and for flow measurement weirs at a number of fish culture stations.

Erosion control works were designed for Earl Rowe and Sibbald Point Provincial Parks.

A flood line mapping study was completed on Black River, Huronia District, and a preliminary Muskoka River Watershed Study was carried out.

Construction

Projects included reconstruction of dams at Sphere Lake, Fox Lake, Kearney, Farr Creek and Graham Lake. Erosion control works were built at Sibbald Point and Earl Rowe Provincial Parks.

A dam on the Mattawa River, formerly owned by Mattawa Electric Light and Power Company, was rebuilt; the hydro-electric generation capability was retained and the works will again be used for generating electricity.

A major fish pass was built on the Beaver River at Thornbury. The pass is of the Borlund lock type, the only one of its kind in Canada; this design was chosen because fish have to be lifted 24 feet over the mill dam and there is limited space between the dam and a bridge on Highway 26.

A new water distribution system was installed at Skelton Lake Fish Hatchery.

Reconstruction of Maskinonge Lake Dam for Ontario Hydro was completed, and civil works were installed at Wasdell Falls for installation of an experimental turbine, again for Ontario Hydro.

Maintenance

Major maintenance was carried out on docks at Sault Ste. Marie, South Baymouth and Parry Sound, on bridges at Net and Thieving Bear Creeks, and at dams on Gooseneck, Sideburned and Ranger Lakes.

The retaining wall at Chapleau Airbase was partially reconstructed.

Dams were removed at Endikai and Rawhide Lakes.

In addition, minor repairs and renovations were made at approximately 70 other Ministry docks and dams as part of the normal Ministry maintenance program.

Water Management

The Branch provides for the operation of Ministry-owned dams for recreation, fish and wildlife protection, flood and erosion control, and Ministry service purposes.

The Branch provides for the regulation of construction, operation and maintenance of private dams, diversions, channelization, water crossing and other water control structures through administration of The Lakes and Rivers Improvement Act. The following activities took place in the regulations of private water control structures under this Act in 1979:

Location Approvals	258
Plans and Specifications Approvals	144
Refusals of Applications for Approval	9
Inquiries Held Under the Act	1
Minister's Orders Issued	3
Investigations of Water Regulation Problems	963

Great Lakes water levels and flows are continuously monitored through reports and information obtained from the International Lake Superior Board of Control and the International St. Lawrence River Board of Control.

The Branch represents provincial interests on the Lake of the Woods Control Board in the regulation of Lake of the Woods and Lac Seul, and on the Ottawa River Regulation Planning Committee which is developing recommendations for regulation of the Ottawa River, an operational application of a forecast model, development of a flood warning system, a liaison mechanism with St. Lawrence River regulation and an Ottawa River Operating Committee.

Lake of the Woods Control Board

This Board was created by concurrent federal, Manitoba and Ontario legislation in accordance with the terms of the Lake of the Woods Convention and Protocol, a treaty between Canada and the United States.

The Board is charged by the treaty with responsibility for regulating Lake of the Woods "with the object of securing to the inhabitants of Canada and the United States the most advantageous use of the waters thereof" and "to ensure the highest continuous uniform discharge of water from the lake" while maintaining the lake level within prescribed elevations.

It is further charged, by the legislation, with responsibility for regulating the level of Lac Seul and of the flows in the Winnipeg and English Rivers between the outlet of the lakes and the confluence of the rivers.

The Board is composed of four members, two representing Ontario, one representing Canada, and one representing Manitoba; for each member, there is an alternate. By the terms of the treaty and the legislation, all must be engineers.

Ottawa River Regulation Planning Committee

This is a joint federal-Quebec-Ontario committee established to recommend criteria for regulation of the Ottawa River, taking into account hydro-electric power production, flood protection, low water problems, and water quality needs and recreation; and to recomend on development of a flood warning system, on an effective liaison mechanism with the International St. Lawrence River Board of Control, and on the nature and funding of a continuing Ottawa River operating committee.

Work began in 1977 and a final report will be issued late in 1980.

Study participants include personnel from Environment, Transport and Public Works, Canada; Environment and Hydro, Quebec; and Hydro and Ministry of Natural Resources, Ontario.

Work and costs have been shared by the participating agencies with each agency being responsible for the salaries and expenses of its employees. Purchased services have been limited to a systems design consultants and computer rental. Costs for purchased services have been shared equally between the three jurisdictions.

Great Lakes Shore Management

The Branch aids the development of shore management policies and provides technical expertise for the alleviation of flood and erosion damage along Great Lakes shores. Current efforts are aimed at implementing recommendations presented in the Canada–Ontario Great Lakes Shore Damage Survey Technical Report, released in 1975. The main purpose of the survey was to compile data detailing the extent of 1972-73 damages, provide information on shore characteristics, and make shore management recommendations.

A Canada/Ontario Great Lakes Shore Management Guide has been compiled in response to the Technical Report recommendation that methods be developed to evaluate shore management alternatives. The guide is being reviewed by a

number of municipalities, conservation authorities, universities, and federal and provincial government agencies before public release.

Monitoring of shore processes has been undertaken, as recommended by the Technical Report, to ensure maintenance of current information on shore characteristics. Ground profiles are taken annually and after major storms at about 165 permanent erosion stations established on the erodible portion of the Great Lakes.

As part of an ongoing Great Lakes public awareness program, newspaper ads were placed in 82 southern Ontario newspapers circulating to shore residents, advising of the availability of various publications and information sources dealing with Great Lakes flooding and erosion problems.

The Branch is involved in References given to the International Joint Commission by the Canadian and United States governments through participation on the Working Committee of the International Diversions and Consumptive Uses Study Board, and on the Working Committee and Coastal Zone Sub-committee of the International Lake Erie Regulation Study Board.

Flood Emergency Response

As "lead ministry" the Ministry maintains a program to co-ordinate the response of the Government of Ontario to flood emergencies declared by the Minister. The Branch administers this program on behalf of the Provincial Co-ordinator.

A number of flooding and potential flooding situations were monitored by district managers during the year, and three of them required a declaration of flood emergency by the Minister. The emergencies were experienced by the hamlet of Field, Springer Township and communities along the shoreline of Lake Nipissing.

Office of Indian Resource Policy

The Office of Indian Resource Policy was established in 1976 as a separate entity with the responsibility for researching and responding to Indian land claims and other Indian land problems, co-ordinating all of the Ministry's involvement in matters relating to Indian people, and providing a consultant type of role within the Ministry on all such matters.

It performs a Central Registry type of function for all land deals with Indian people by any Ontario ministry and Ontario Hydro. It is responsible for keeping the Ministry (and Government) aware of the possible extent of future land claims and their significance.

The Office develops Ministry positions on these claims and prepares recommendations to Cabinet. It undertakes research for these in consultation with other ministries and with the Federal Government and Indian bands and their associations. On the direction of Cabinet, it negotiates the settlement of valid land claims with the Indian people involved.

The Office also develops and co-ordinates Ministry policy that has a significant impact on Indian people.

Aviation and Fire Management Centre

Fire Management

A total of 1,564 forest fires burned over 63,715 ha (157,444 acres) in Ontario during the 1979 fire season. The totals included 28 fires which occurred within the fire district but outside the area of intensive protection; these fires burned over 11,227.4 ha (27,743.6 acres). The totals did not include 20 fires which occurred outside the fire district and burned over 3,725.4 ha (9,205.7 acres).

Unlike the years 1974 to 1977 when serious fire problems developed, and unlike 1978 which was considered below normal activity, 1979 was close to being an average year — 1,350 fires and 60,703 ha (150,000 acres).

Because the weather in the spring was for the most part cool and wet, which delayed normal "green-up", the result was a rash of rather short-lived but high-acreage fires around the beginning of the summer. Provincial manpower and equipment resources were mobilized into northwestern and north central Ontario as the number of fires and intensity exceeded the suppression capability of the resident forces. A high pressure system became entrenched over northern Ontario and maintained the fire hazard conditions throughout most of the province.

This weather pattern broke in early July, at which time the incoming frontal system started several lightning fires. Fortunately, relative humidities were generally high and the prevailing winds were light during this period. None of the fires which occurred became overly serious.

Aircraft utilization of the province's Tracker fleet, now existing of four operational aircraft, was limited in 1979. The decision was made to dispose of the aircraft. A serious look was taken to dispose of all aerial retardant plus retardant storage, mixing and loading equipment and facilities. Throughout the fire season, arrangements were made with other provinces for the receipt or loan of heavy water-bombing resources. A shortage of helicopter availability was noticeable.

Fire Prevention

Emphasis was on evaluating existing material and introducing new items directed to specific groups. The campfire problem was approached by producing a poster with the caption "Some Campfire" and a plastic weather-proof map with a campfire message on the side.

A series of 30 and 60-second radio messages were prepared and distributed to stations throughout the province.

Posters, T-shirt decals and buttons with an animal theme, with the caption "Our Friends Don't Play With Fire," were added to the school program. The button/decal format was also produced for older groups. Blueberry boxes were distributed to the public in the Northeastern Region.

A modular display kit with clip-in panels was made available for community programs. A library of panels illustrating fire management programs was assembled to enhance local programs.

A 16 mm film, entitled "Some Campfire," was produced to illustrate the many aspects of fire management in an entertaining format.

A general fire information booklet was updated to be reprinted, and audio-visual programs were being produced.

Training

Two fire-safety courses were provided to non-fire staff to train them to act as fire safety officers. Two fire-accounting courses were held to upgrade accounting skills on campaign fires and multiple occurrence situations.

One course was given in basic fire suppression (Fire Course I). This trains initial-attack fire bosses and sector bosses.

A fire-weather course was held to provide background information to assist staff to understand rudimentary weather and to apply same to a fire situation. Fire staff and plans and records officers attended.

The Ministry shared a joint Ontario-Manitoba Instructor Training Course which was held in Manitoba.

A state-of-the-art seminar was held for some 150 fire control and management staff. Theme rooms were established for such areas as communications, weather, equipment, computers and remote sensing.

Development Work

During 1979 a total of 14 projects were undertaken in the area of equipment development and evaluation. Projects of particular interest were modifications on the Ontario aerial ignition device, development of a portable kitchen and water system for use on large fires, method for drying hose from an outside hose drying tower under inclement weather conditions, and evaluation of synthetic hose.

Several other projects were undertaken. These included work with the automatic lightning direction-finder and locator, Landsat satellite imagery, computer-based decision-making aids, and co-operative projects with the federal government in the areas of fire behavior, fire ecology and prescribed burning research.

Prescribed Burning

Ontario suffered its first loss of life associated with ground fire operations. Seven youths, five males and two females, died while participating in the initial ignition of a 250-acre prescribed burn in an area north of Geraldton.

Administrative Services Branch

Services

The responsibilities of the Services Section manager include the Ministry's customer service program.

The co-ordinator of hospitality is responsible for arranging Ministry functions, conferences and air transportation.

Office Management

The unit is responsible for the following: design, issue and replacement of uniforms; continual updating of the Ministry's listings in telephone directories across the province; issue of identification cards and telephone credit cards to Ministry staff; distribution of government manuals and their revisions as well as the Ministry's policy and procedure directives; the equipment inventory control system and main office equipment inventory control records; the copy centre which provides printing services for main office; the mail room and messenger service; and main office telecommunications.

Public Service Centre

The Centre is responsible for the sale and distribution of Ministry publications, maps, aerial photographs, and hunting and fishing licences. The maps handled include the Provincial Topographic, Fishing, Territorial, Geological, Forest Stand, Planimetric and Basic Mapping series, the National Topographic series, and the county maps of the Ministry of Transportation and Communications.

A Natural Resources information booth on the main floor of Whitney Block provides information to visitors and handles general inquiries by telephone.

Supply

Supply Management

The unit is responsible for co-ordinating Ministry procurement policy and assisting Ministry offices on procurement matters. Duties include the issue and revision of directives of purchasing via Supply Manual; preparation of standard purchase forms and specifications; assistance in preparing contract documents and tendering needs; co-ordination of the Ministry purchasing officer training; and the Federal-Provincial Reciprocal Tax Program for the Ministry.

Purchasing

The unit is responsible for the purchase of most goods and services for main office. It also purchases some goods and services for a few field offices. The unit acts as the Ministry's liaison with the Ministry of Government Services in the purchase of office furniture and furnishings. It establishes Ministry bulk purchase agreements and standing offers where feasible, and it offers assistance and guidance on the research and development of new sources of supply.

Central Supply Warehouse

The warehouse provides a warehousing and distribution service for common Ministry items such as forms, publications, maps, uniforms, permits and licences. It is located at 733 King Street West, Toronto, and uses 3580 m^2 (38,500 square feet) of space. It issues a monthly inventory report and assists in the preparation of a semi-annual Forms and Publication Catalogue which is distributed to all Ministry offices. It also provides a small-delivery-van service for daily service between main office and the warehouse, in addition to emergency pick-up service within Metro limits.

Records and Forms Management

The Records and Forms Management Section is responsible for the application of effective program techniques, as required by the Manual of Administration, and for the provision of technical advice to all sectors of the Ministry.

Records Management

The unit is responsible for maintaining an accurate inventory of all records, records equipment and microrecording equipment; control over the initiation, maintenance, protection, retention and disposition of all Ministry records; conducting feasibility studies regarding all microrecording systems and submitting all proposals to senior management for approval and to Management board when necessary; conducting training seminars for the Ministry in all aspects of records management; developing Ministry file classification plans; and conducting word processing feasibility studies.

Forms Management

The unit is responsible for establishing, maintaining and reviewing an inventory of Ministry forms; reviewing and approving all requests for forms printing; improvement in design of necessary forms by adherence to Ministry and government-wide design standards; providing forms analysis and design service to users; providing technical guidance to form originators; and conducting training seminars in forms management and design for Ministry personnel.

Data Processing

The unit accepts for keying the source documents for the Ministry's production data processing systems; schedules, submits and receives computer runs and sees that reports are distributed to user branches; maintains Ministry magnetic tape library; administers the Ministry's magnetic tapes retained in the library of the Central Computing Branch; maintains sufficient systems documentation to enable a contract programmer to carry out maintenance or minor revisions when requested by user branches; assist user branches in identifying computer problems and suggests means of rectifying problems; and keys data from source documents onto magnetic tape or tab cards in a predetermined format. The cards and tapes are interpreted by the Ministry's computer programs to produce the desired reports.

Facilities and Fleet

Facilities

The basic role of the unit is the assessment of the accommodation needs of the field and program proups, the co-ordination of the accommodation services provided by the Ministry of Government Services, and the control of individual projects. This role relates to the provision of new capital and leased facilities, and the upkeep of existing facilities.

The major construction projects completed during the year included the Thunder Bay irrigation system, the Midhurst irrigation system, the Sault Ste. Marie communications shop, the Napanee warehouse, the Nym Lake staff hostel, the Armstrong standby trailer, and the Wawa office portables.

A hangar was acquired at Timmins Airport and a new residence was purchased for the manager of the Hill Lake Hatchery.

Major office renovations were completed for the Assistant

Deputy Minister of southern Ontario, Policy Co-ordination Secretariat, Parks Branch and Ontario Geological Survey.

Leasing projects were arranged to provide additional space for the Petroleum Resources Lab in London, Timmins District Office and Cornwall District Office.

Fleet and Equipment

The unit provides a variety of management and operational services for the field and main office fleet which has a stock of 4,000 owned and leased units. A major undertaking during the year was the development of a Fleet Management Information System.

Personnel Services Branch

Manpower

In their respective areas of responsibility, all units of Manpower Section are responsible for maintaining through the section supervisor liaison with central agencies such as Management Board Secretariat, Civil Service Commission and for providing the agencies with Ministry views on proposed policies, guidelines and procedures. All units develop and recommend to senior management new or revised internal Ministry policies, guidelines and procedures. The units and their responsibilities are named below.

Youth Programs

Selection and assignment of applicants for the Ministry's own Junior Ranger and the Government-wide Experience programs. Selection and assignment of students applying for summer jobs in the main office. Dealing with the Youth Secretariat on all matters related to youth programms including negotiating salary allocations and amounts of supporting costs, Auditing of Junior Ranger camps and their work programs.

Staffing

Providing main office with direct staffing services for professional, administrative, technical and support staff. Dealing with all "Surplus Staff" issues and the Co-operative Training Program of the Youth Secretariat.

Training and Development

Providing consultative and direct training and development services for all organizational units of the Ministry by designing, testing and producing a variety of management development courses and by improving and re-designing technical training manuals for a variety of technical courses.

Manpower Control

Maintaining current records of staff strength, vacancies and "classified structure ceiling" for individual organizational units and the whole Ministry. Producing for the Ministry's senior management and for central agencies regular (weekly, monthly and annual) reports.

Unclassified Staff

Producing annually Ministry's operational manual for employment of unclassified staff and throughout the year dealing with specific related problems, and providing advice to line managers and to other functional areas of the Ministry and all related matters. Producing monthly reports on the numbers of unclassified staff for central agencies and on demand reporting on numbers by specific categories and types.

Compensation and Staff Relations

The Compensation and Staff Relations Section has the following responsibilities:

Classification of positions under delegated authority, and the recommendation of classification of positions not under delegated authority to Civil Service Commission;

Advising managers on organization, job design, classification and pay-related matters;

Maintaining control of positions and classification validity, developing classification standards, modifying existing classification standards, recommending standards changes and improvements to Civil Service Commission, and reviewing and auditing classification decisions of regional personnel officers;

Providing input to the Civil Service Commission on pay and classification policies, procedures, needs and problems;

Representing Ministry at salary negotiations, making special case submissions for dealing with salary problems, developing and recommending ministry wage and salary administration guidelines, and interpreting pay administration procedures;

Job analysis and job evaluation training and conducting personnel operational audits;

Dealing with matters related to collective bargaining (e.g. local, Ministry and service-wide negotiations) with the bargaining unit, and representing Ministry at central agency negotiations;

Providing input to Civil Service Commission on staff relations, working conditions and benefits policies, needs and problems;

Advising managers on employee discipline and grievances and defending Ministry position on employee grievances before various arbitration boards;

Interpreting and explaining collective agreements and arranging medical and mandatory referrals;

Administering Quarter Century Club, Home Ownership Relocation Plan, employee and pre-retirement counselling and liaison with OPSEU; and

Staff Relations training and management-bargaining unit status determination.

Personnel Records

Personnel Records Section has the following duties:

Documentation of personnel records; leaves of absence recommendations; processing nomination to staff; transfers; separations; group insurance applications and changes; dental plan; merit increases; accelerated increases; salary revisions; employee indebtedness; estates; maintaining personnel files for all regular and probationary staff; maintaining classification files; and providing statistical information at the request of other branches of the Ministry.

Senior Administration Staff

March 31, 1980

Deputy Minister

Dr. J.K. Reynolds.

Assistant Deputy Ministers

W.T. Foster, Southern Ontario
J.W. Keenan, Administration
L. Ringham, Northern Ontario.

Regional Directors

R.A. Baxter, North Central (Thunder Bay)
W.G. Cleaveley, Northeastern (Sudbury)
R.M. Dixon, Central (Richmond Hill)
G.P. Elliott, Northern (Cochrane)
K.K. Irizawa, Algonquin (Huntsville)
G.A. McCormack, Northwestern (Kenora)
J.R. Oatway, Eastern (Kemptville)
N.D. Patrick, Southwestern (London).

Executive Co-ordinators

H.A. Clarke, Lands and Waters Group
D.P. Drysdale, Program Management Evaluation
L.H. Eckel, Outdoor Recreation Group
G.A. Jewett, Mineral Resources Group
A.H. Peacock, Forest Resources Group
G.D. Spry, Finance, Planning and Evaluation Group.

Directors

E.F. Anderson, Lands Management Branch
R.J. Burgar, Conservation Authorities and Water Management Branch
R.G. Code, Surveys and Mapping Branch
M.W. Cox, Budget and Program Analysis Branch
H.B. Farrant, Human Resources Planning
M.B. Fordyce, (Mrs.) Policy Co-ordination Secretariat
W.K. Fullerton, Forest Resources Branch
A.C. Goddard, Financial Services Branch
G.A. Hamilton, The Leslie M. Frost Natural Resources Centre
A. Jackel, (Acting) Personnel Services Branch
K.H. Loftus, Fisheries Branch
E. Markus, Timber Sales Branch
Dr. T.P. Mohide, Mineral Resources Branch
F. Moritsugu, Information Services Branch
Dr. E.G. Pye, Ontario Geological Survey
J.A. Queen, Administrative Services Branch
R.A. Riley, Land Use Co-ordination Branch
J.D. Roseborough, Wildlife Branch
W.L. Sleeman, Aviation and Fire Management Centre (Sault Ste. Marie)
R.J. Vrancart, Parks and Recreational Areas Branch
A.A. Ward, Internal Audit Services Branch
E.G. Wilson, Office of Indian Resource Policy
D.M. Wood, Management Planning and Analysis.

Head

Dr. D. Burger, Ontario Forest Research Centre (Maple).

District Managers

W.D. Adlam, Ottawa District
E.N. Arbuckle, Espanola District
J.R. Bailey, Lanark District
R.G. Bailey, Napanee District
M.P. Barker, Bancroft District
W.R. Catton, Cambridge District
J.K. Cleaveley, Fort Frances District
P.R. Davidson, Aylmer District
J.E. Dickenson, Niagara District
C. Dionne, Gogama District
T.E. Dodds, Ignace District
I.B. Earl, Maple District
R.Elliott, Chapleau District
C.E. Emblin, Hearst District
H.P. Endress, Dryden District
E.W. Everley, Red Lake District
J.F. Goodman, Sioux Lookout District
C.R. Gray, Lindsay District
L.J. Haas, Pembroke District
D.L. Hagar, Blind River District
J.E. Hamilton, Kirkland Lake District
A.M. Harjula, Atikokan District
G.O. Koistinen, Nipigon District
J.H. Lever, Bracebridge District
R.G. Lightheart, Kapuskasing District
W.J. Lovering, Parry Sound District
W.D. Mansell, Huronia District
R.B. McGee, Temagami District
D.B. McGregor, Kenora District
D.E. McHale, Thunder Bay District
M.F. McKenzie, Simcoe District
T.J. Millard, Algonquin Park District
J.R. Morin, Cornwall District
A.F. Papineau, Timmins District
J.D. Parker, Chatham District
N. Richards, Wingham District
E. Rogers, North Bay District
J.H. Sellers, Sault Ste. Marie District
J.A. Simpson, Sudbury District
A.J. Stewart, Moosonee District
W.J. Straight, Wawa District
P.A. Strassburger, Terrace Bay District
R.W. Tippett, Owen Sound District
R.H. Trotter, Brockville District
W. Vonk, Tweed District
J.D. Walker, Geraldton District
D.D. White, Minden District
G.A. Wright, Cochrane District.

Total Staff

March 31, 1980	Regular	Probationary	Unclassified	Total
Main Office	848	69	278	1,195
Field Offices	3,240	272	1,660	5,172
Total	4,088	341	1,938	6,367
Total Complement of Positions				4,541
Regular and Probationary Staff				4,429
New Employees Hired, 1979-80				316

Professional Staff

March 31, 1980	
Biologists	145
Economists	7
Engineers	9
Foresters	288
Geologists	53
Park Planners	24
Scientists	47
Miscellaneous	48
Total	621
Resource Technicians	1,648
Licensed Scalers	1,176

Staff Turnover

1979-80	
Deceased	11
Transferred	38
Released	1
Resigned	199
Dismissed	3
Retired	89
Total	341

The ratio of separations to total of regular and probationary staff at March 31, 1980, was 7.8%.

Safety

Safety Program Development Section continued to be involved with Ministry employee safety programs and the safety of the general public in provincial parks and other Crown lands; training employees in first aid; vehicle driver improvement programs; fire safety procedures; water safety and supervisory training in accident control and job safety planning, etc; and inspection of work areas, equipment and vechicles. The following numbers of employees were trained as noted.

Accident Investigation	80
First Aid Courses	508
Defensive Driving Courses	204
Junior Ranger Safety Training Courses	18
Axe and Chainsaw Courses	41
Junior Ranger Foreman Courses	10
Snowmobile Training Courses	7
Inspections (Buildings, Camps, Nurseries, etc.)	347

Legal Services Branch

During the fiscal year commencing with April 1, 1979, and ending with March 31, 1980, amendments were made to two statutes administered by this Ministry. Amendments were made to The Crown Timber Act (by Statutes of Ontario, 1979, Chapter 92) and to The Trees Act (by Statutes of Ontario, 1979, Chapter 51).

The Legal Services Branch prepared and processed 66 regulations made under the authority of acts administered by the Ministry and 437 Orders-in-Council.

Three hundred and sixty agreements were processed through the Branch.

Information Services Branch

The radio series, *Ontario Outdoors,* won first prize in the radio program category of the international competition sponsored by the (North American) Association for Conservation Information for the 1978 year. The series is used repeatedly by 58 Ontario stations and well known to listeners for the conservation messages voiced by Ministry personnel and the "tall tales" of the Branch's contract producer. Since its beginning in 1971, the series has given Ontario radio stations a 27-minute program every two months.

In the same competition, the Branch-produced film, *Polar Bear Provincial Park,* which had won two previous North American awards, took third place in the motion picture category.

Exhibits

Two new systems added persuasive display capabilities to the Ministry's presentations during the year. The first was a portable field exhibit prepared for the public meetings held throughout the Province last fall and winter in connection with the moose management program. Main office and regions were all supplied with a freestanding 12-foot system which included a permanent Ministry logo, lights, carrying case and a trolley for transportation. The moose management display can be replaced by local displays or other packages to be supplied by the Branch in the coming year.

A complete communications package was produced for Mineral Resources Group to allow the Group to tell about itself and the importance of mining in quickly understandable words and graphics. The presentation combined audio-visual, publication and exhibit. It was aimed primarily at other staff, both field and main office, but is also suitable for other agencies and the general public.

"Discover Ontario's Crown Lands" was the theme of the Ministry's principal exhibit, staged at the Canadian National Sportsmen's Show in Toronto March 14 to 23. It appeared to stir the interest of many of the 200,000 visitors with the facts (not too well known) about the vast extent of Ontario's lands and waters and the wide scope of the Ministry's management.

The Branch planned and co-ordinated the Ministry exhibits at the Central Canada Exhibition, the Lakehead Exhibition and the International Plowing Match. It also assisted with exhibits and displays for 45 smaller fairs and events where the Ministry presentation was managed by field offices and program branches.

News and Information

To assist Forest Resources Group, a public information program by the Branch was put into effect during the summer of 1979 to inform the news media and the public in certain areas of northern Ontario of the Ministry's use of pesticide and herbicide spraying.

The program worked through media information meetings, public information meetings, newspaper advertisements, posters and brochures in both English and French languages. The result was a generally improved understanding of the need to spray Crown forests.

During the year the Branch co-ordinated information from main office and field offices and distributed pertinent news material to the media. The total of 102 major news releases included six in the French language. An additional 91 releases announced grants for conservation authority projects and parks assistance programs.

In emergency situations caused by flood or forest fire, the Branch assisted in setting up information networks and delivered up-to-the-minute information to principal news outlets.

Staff support and guest personnel were provided for TV and radio programs throughout the Province.

Material was mailed to 52,467 persons who asked for information on Crown land, natural resources or outdoor recreation.

A-V and Films

In addition to audio-visual presentations and photographic illustrations for Ministry exhibits, the Branch's principal production was a 17-minute film on the new foot-snare live-trap developed by Wildlife Branch. The film is being shown to audiences across the Province.

During the year the Branch acted on 138 requests for photography services related to Ministry programs and publications. The darkroom produced 3,885 prints.

The motion picture library loaned 1,169 films to Ministry offices and outside groups, 174 of whom were loaned audio-visual equipment. It acquired 18 films, bringing the catalogue total to 363. The theatre was booked for 166 showings.

Publications

During the year the Ministry released 61 books or large booklets, 79 smaller booklets and nine large folders, usually sold to the general public on a cost-recoverable basis. The publishing list included scientific papers, technical reports and manuals, and numerous leaflets or small folders on Ministry services and installations.

French-language publications included a number of small publications on local features, several annual releases and new items as listed below. The new publications of main office and field offices included the following:

Algonquin Provincial Park Master Plan–First Five-Year Review
Annual Review of the Activities of the Ontario Centre for Remote Sensing
Answering Your Questions About...
- Canoeing in Ontario
- Free Group Camping in Provincial Parks
- Long-Distance Hiking in Ontario
- Free Use of Ontario Provincial Parks by Senior Citizens

L'avenir du nickel et le droit de la mer
Class Environmental Assistance for...
- Access Roads to MNR Facilities
- Dams and Dykes
- Fishways
- Solid Waste Disposal

Deer Management in Ontario — The Future
Ethics...Code of Ethics and Conduct
Factor Substitution and Biased Technical Change in the Canadian Mining Industry ($5)
Forest Management Agreements
From Pits to Playgrounds: Aggregate Extraction and Pit Rehabilitation in Toronto ($3)
Fur Management in Ontario
The Future of Nickel and the Law of the Sea — Policy Background Paper No. 10 ($1)
Geology and Fossils, Craigleith Area (75¢)
Geology and Scenery, Killarney Provincial Park Area ($2)
Geraldton PB-3/79 Board of Review Report, September, 1979
Gold Deposits of Ontario, Part II ($2.50)
Guide to Legislation Affecting Mining in Ontario ($15)
In Answer to Your Questions about Aerial Spraying in Northern Ontario
Keep It Natural — A Guide for Cottagers
Larose Forest
- La Forêt Larose

Land Use Planning

Manomin Wild Rice Recipes ($1.50)
Moose Management in Ontario — Problems and Solutions
Oil and Gas Exploration, Drilling and Production Summary, 1977 ($7.50)
Ontario Minerals — You Can't Get Along Without Them
Ontario Mining Statistics, A Preliminary Compendium — Policy Background Paper No. 11 ($5)
Perspectives pour Kirkland Lake
Pit and Quarry Rehabilitation—The State of the Art in Ontario
Platinum Group Metals — Ontario and the World ($25)
Primary Wood-Using Industries in Ontario, 1979
Proceedings of the Second Ontario Conference on Forest Regeneration
Prospects for Kirkland Lake
Some Peat Moss and Peat Deposits in Selected Areas ($2)
Tomorrow Is What You Make It
Toute ce que vous désirez savoir sur la vaporisation aérienne des forêts du Nord de l'Ontario
Towards the '80s
Trees and Shrubs for the Rehabilitation of Pits and Quarries ($2)
Tweed District Crown Land — A Guide to Its Use
World Mineral Markets — An Econometric and Simulation Analysis ($15)
You and the MNR Management System
Your Career in Resources Management.

Program Management Evaluation

Program Management Evaluation is a short-term staff function, established in April, 1978, for the following two purposes: to develop mechanisms to improve management performance; and to develop a reliable and comprehensive management information system.

During the fiscal year, activities were concentrated on three areas: operational audits; activity structure and a system of output measures; and the management information system.

Implementation of the operational audit system was completed and responsibility for its ongoing administration transferred to the Management Planning and Analysis Branch.

A comprehensive activity structure, with supporting output measures, was developed to facilitate determination of more precise operating costs, thereby making meaningful performance evaluation possible. Implementation of the new system commenced with the 1980-81 Annual Work Plan process and will be completed in conjunction with the 1981-82 Annual Work Plan.

Work on the Ministry's Management Information System commenced midway through the fiscal year. The objective of this project is to identify and provide precise management information concerning vital activities to the Minister and senior Ministry staff, as well as to managers at all levels, on a regular basis.

Human Resources Planning

The Human Resources Planning Project grew out of the Management Improvement Program and work on the Human Resources Planning System began January 2, 1979. Development of the system is continuing and various components of the system are being tested in Algonquin Region. The system has five functions or purposes.

First, it is a Human Resources Information System to provide management with accurate, current, timely information about people in the Ministry. The information system provides:

- A Skills Inventory which outlines the experience, education and training of people in the Ministry;
- An Inventory of Promotables for planning purposes; and
- A Data Storage and Retrieval System.

Second, it is a Career Planning Process to help employees plan their careers, and supervisors and managers fulfill their role as career counsellors.

Third, the system is a Training and Development Planning Process to identify the training and development needs of staff and plan for fulfilling those needs.

Fourth, it is a Staffing and Selection Process to help fill vacancies and facilitate staffing.

Finally, it is a Mannpower Planning Process to ensure the Ministry's human resource requirements are identified and plans developed to meet those needs now and in the future.

The appraisal of employee performance by supervisors is an essential part of the system and to this end the Ministry is embarking on an extensive program of training supervisors and managers through a series of one- and two-week courses in Performance Management. This training is being co-ordinated by the Staff Development Unit of Personnel Services Branch. The program will commence in September and is scheduled to finish in early April. By the time the program is completed some 800 or 900 supervisors and managers will have received the training.

Implementation of the Human Resources Planning System is scheduled to begin in April, 1981, and will continue through 1981 and into 1982. The System is an investment by the Ministry in the effective utilisation of the human resources of the Ministry.

Affirmative Action

The Affirmative Action Program was begun in 1974-75 with the goal of ensuring equal opportunity for women in the Ontario Public Service. Because of the slow rate of improvement in women's occupational status, in 1977-78 a more concrete focus was given to the program so that, while the goal remained the same, the objective was to increase the number of women in all positions and levels where in the past few or no women were employed.

The Women's Co-ordinator is responsible for providing advice and technical assistance to managers at all levels, encouraging women to take advantage of new opportunities, co-ordinating the Ministry's Affirmative Action Plan, and monitoring and evaluating its implementation.

Various methods were used to increase understanding of the objectives and methods of the program, with greater emphasis than previously on statistics showing the slow rate of progress. Speeches by the Women's Co-ordinator to meetings of male and female staff were continued, and written reports on various aspects of the program were widely distributed within the Ministry.

Monitoring and improvement of staffing processes continued. More Selection Boards had members of both sexes, and increasingly the female member had experience in the field concerned. Managers continued to advise the Women's Co-ordinator on each job competition of the criteria on which the applicants were judged.

Personnel Services Branch conducted six courses to instruct managers in the best selection procedures. The Branch also conducted three Performance Management Seminars.

A more formal system is now in place to collect information on hiring, retention, promotion, training, job rotation and job enrichment at the District and Branch level. Data is now available on the number of females employed on unclassified staff in resource management fields.

Efforts continued to increase the numbers of women enrolling in resources management courses, and to assist them to obtain work experience. There was an increase in female Junior Rangers to 788 from 760 in the previous year. Female summer students continued to be hired in all disciplines, and female graduates made up a fair proportion of seasonal unclassified staff.

Increasing upward mobility of present female staff is a priority of the program. The number of special courses increased; three Women into Management courses were held, and 18 in Career Planning and Assertiveness Training. Individual Training and Development plans were made for female employees. Job rotations and other job enrichment activities increased, as did counselling of individual women, particularly on job search techniques.

The Ministry has a network of elected Affirmative Action representatives whose primary role is to encourage female employees to take part in opportunities available. Two three-day conferences of these representatives were held for training, information exchange, and advice on program activities. The elected women form Affirmative Action Committees at the Group and Regional level.

There continued to be a small improvement in the proportion of women in three of the five management classes — Administrative, five additional women; Clerical, two additional women; and Professional, one additional woman.

In the Scientific and Professional Services category, the number of women increased from 35 to 37 during the year but there was no change in percentages as the group increased in size.

In the Technical Services category, a group in which Ministry female staff made a substantial gain the preceding year, the number of women increased from 44 to 48.

Financial Services Branch

The prime objectives of Financial Services Branch are to provide financial and accounting services to the Ministry, and to ensure that internal financial controls are met. Those financial controls are imposed by legislation and Treasury requirements as well as by principles of sound financial management.

The Branch has decreased its number of units and reduced employee complement by 10 in this fiscal year, making a total staff reduction of 47 since 1974, accomplished by re-organizing responsibilities, making use of computer systems and simplifying procedures. Branch complement currently stands at 82.

Accounts Payable

Accounts Payable Section pays all Ministry accounts resulting from suppliers, travel expenses and disbursements, provides refunds, and processes financial transactions between ministries. Requisitions for payment are keypunched at electronic data entry stations in field office and main office accounting centres, directly into the accounts payable computer system. Requisitions are checked automatically in Accounts Payable Section for correct name and address and availability of funds. If valid, payment information is then reproduced on magnetic tape and sent to a Treasury computer which prints the required cheques.

This automated system ensures that the majority of accounts throughout the Province are paid within 30 days as recommended by the Ontario Government. This year it processed $148.5 million of expenditures, which included $4.9 million of travel claims. There were 188,300 invoices from suppliers, excluding local disbursements.

Licence Issuing

The Ministry oversees the sale of 45 types of hunting and angling licences, three different export permits, 13 kinds of park permits, and the distribution of two types of commercial fish licences and two types of commercial fur licences. Sales are made at Ministry district offices and by private vendors — local store, gas station or marina owners, for instance. There were 2,981 of these licence issuers at year-end.

The Licence Issuing Section co-ordinates the distribution of licences to issuers, and the collection of accounts, as well as maintaining sales and inventory figures. Control is maintained through an EDP system that distributes inventory reports, issues monthly statements of individual accounts, and automatically produces invoices. District offices play a major role in collecting delinquent accounts.

The Section provides background information about applicants to the Minister of Natural Resources who grants the authority to issue licences.

IPPEBS

The responsibilities of IPPEBS Section include payment of both classified and unclassified employees and maintenance of the Central Attendance Reporting System (CARS), an automated system for recording attendance and vacation credits.

IPPEBS Section takes its name from the Integrated Payroll, Personnel and Employee Benefits System, a Government-wide electronic data processing (EDP) system that produces regular pay cheques for the Ministry's classified and unclassified employees, records employee benefits and supplies T4 slips for income tax purposes.

This year, the unclassified employee payroll was added to the IPPEB System. Prior to this change, which was implemented for the January 3 pay day, the unclassified payroll was prepared at the Ministry of Transportation and Communications Centre in Downsview and was geared to distribution on alternate weeks from the classified payroll.

The unclassified payroll ranged from a monthly low of 1,511 to a high of 10,931 in the summer. Seasonal staff included 6,288 students, 2,050 of them being Junior Rangers. Extra firefighters are not included in this payroll. Payroll data for unclassified field office employees is added to the IPPEB System, and attendance data for classified field employees is added to CARS at electronic data entry stations at regional offices, the St. Lawrence Parks Commission and the Aviation and Fire Management Centre. IPPEBS Section continued to provide advice and instruction to these regional centres about operation of the system.

In another change to the system, IPPEBS Section staff added the newly negotiated dental plan to employee benefits records.

Revenue Accounts and Security Deposits

Revenue Accounts and Security Deposits Section maintains computerized records of all accounts receivable from the sale or lease of Crown land; from timber, mining and pits and quarries operations; and from other licences, taxes and royalties. The Section keeps manual records of security deposits held as collateral for timber licences, park concessions or petroleum resources licences.

Revenue Receiving

Revenue Receiving Section deposits all revenue received at main office and field offices into the Ontario Government's Consolidated Revenue Fund, and administers the Ministry's accountable advance account.

Revenue Receiving Section brought into operation last November the Ontario Government's first central banking system.The Ministry of Natural Resources was selected by Treasury to develop and test this new system, primarily because of its wide geographic dispersion and decentralized spending pattern. In past years, the Ministry maintained numerous bank accounts in regions and districts to cover local payrolls and advance payments, a practice also followed by other decentralized ministries.

Under the central banking system, the various chequing accounts maintained throughout the Province are funded from one central account at main office for the exact amount of the cheques cleared through the bank. This has resulted in a significant reduction in the level of funding.

Financial Reporting and Control

Financial Reporting and Control Section includes the following major areas of responsibility.

Financial Reporting and Claims

Reports on Ministry finances are issued to Government central agencies, to Treasury for the Public Accounts, and to all levels of Ministry management. Some 50 different reports are distributed to management each month. Staff collect and analyze financial data via the computerized Expenditure Accounting System (EAS) which processed almost one million expenditure transactions.

A recent modification made to the EAS allows the Branch to feed data on magnetic tape directly to the Treasury Payment Control system. This has expedited payment of suppliers.

Claims for recoveries (that is, money owed from other ministries, agencies and other levels of Government) are also processed by the Section. These claims are now computer produced as a result of a recent innovation to the EAS.

Financial Control

Appropriations voted by the Legislature and allotted by management to fund Ministry activities are monitored from this area, which checks all MNR expenditures against budget estimates. Staff also forecast and report Ministry cash-flow requirements to Treasury and keep necessary expenditure records.

Data Conversion

The Unit enters financial and other pertinent data into the Branch's EDP systems and distributes computer-produced financial reports to management. Data collected from regional offices, the St. Lawrence Parks Commission, the Aviation and Fire Management Centre and main office groups is entered by keypunch operators and transmitted automatically to the Data Conversion Unit, where it is converted to magnetic tape for processing by the Ministry of Government Services' computers.

Financial Methods

It is the responsibility of Financial Methods Section to provide expertise on the development and operation of both electronic data processing and manual accounting systems. A second major function is to establish Ministry-wide procedures for conducting financial transactions and subsequently provide direction to managers through information bulletins, directives, accounting forms, training manuals and courses.

The Section developed and held six sessions of a training course for field accounting personnel, "Module 3: Revenue, Accounts Receivable and Accountable Advances". A total of 143 persons attended this course. In addition, Fire Accounting teams were trained in two courses held in February and March, 1980.

Fifty-five directives were written and issued either as amendments to existing instructions or as new procedures.

The Central Banking System, which came into existence recently, was a product of this Section. A second major project was a design for computerizing Pits and Quarries Accounting. Implementation of that system is awaiting passage of legislation governing pits and quarries.

In consultation with users, the Section developed improvements to systems for processing expenditure accounting, mining revenue, rentals and timber accounts receivable. A report entitled *Expenditure Accounting System, General Description* was prepared and distributed throughout the Ministry.

Statement of Budgetary Revenue

For the year ended March 31, 1980

	($thousand)	($thousand)
MINISTRY ADMINISTRATION PROGRAM		
Reimbursement of Expenditures		
Government of Canada	12	
Other	4	
Sales and Rentals	1,086	
Recovery of Prior Years' Expenditures	50	
Other	70	
Total for Ministry Administration		1,222
LAND MANAGEMENT PROGRAM		
Royalties		
Water power	19,280	
Timber area charges	5,471	
Mining		
Acreage Tax	597	
Fees and licences	587	
Reimbursement of Expenditures		
Government of Canada	133	
Other	165	
Sales and Rentals	4,552	
Recovery of Prior Years' Expenditures	152	
Total for Land Management		30,937
OUTDOOR RECREATION PROGRAM		
Reimbursement of Expenditures — Government of Canada	1.603	
Recreational Areas	6,692	
Fish and Wildlife	13,786	
St. Lawrence Parks Commission	3,683	
Recovery of Prior Years' Expenditures	137	
Total for Outdoor Recreation		25,901
RESOURCE PRODUCTS PROGRAM		
Mineral Management		
Profits tax	99,077	
Royalties	1,540	
Fees	126	
Forfeitures	28	
Recovery of Prior Years' Expenditures	34	
Forest Management		
Stumpage	42,729	
Forest products	635	
Stock production	236	
Reimbursement of Expenditures —Government of Canada	26	
Recovery of Prior Years' Expenditures	15	
Other	75	
Total for Resource Products		144,521
RESOURCE EXPERIENCE PROGRAM		
Frost Centre Facilities	245	
Total for Resource Experience		245
Total Budgetary Revenue		202,826

Statement of Budgetary Expenditure

For the year ended March 31, 1980

	($thousand)	($thousand)
MINISTRY ADMINISTRATION PROGRAM		
Main Office	3,144	
Financial Services	2,036	
Supply and Office Services	3,406	
Personnel Services	1,008	
Information Services	1,056	
Systems Development Services	41	
Legal Services	535	
Audit Services	562	
Field Administration	14,407	
Total for Ministry Administration		26,195
LAND MANAGEMENT PROGRAM		
Water Control and Engineering	13,684	
Forest Protection	17,086	
Air Service	4,495	
Extra Fire Fighting	8,314	
Resource Access	5,075	
Land and Water Classification	7,950	
Land, Water and Mineral Title Administration	12,295	
Conservation Authorities	32,592	
Basic Mapping and Geographic Referencing	1,956	
Total for Land Management		103,447
OUTDOOR RECREATION PROGRAM		
Recreational Areas	30,139	
Fish and Wildlife	27,130	
St. Lawrence Parks Commission	8,076	
Wasaga Park Community Project	7,238	
Total for Outdoor Recreation		72,583
RESOURCE PRODUCTS PROGRAM		
Mineral Management	9,733	
Forest Management	56,770	
Total for Resource Products		66,503
RESOURCE EXPERIENCE PROGRAM		
Junior Rangers	4,368	
Youth Corps (Experience '79)	5,597	
Leslie M. Frost Natural Resources Centre	1,106	
Total for Resource Experience		11,071
Total Budgetary Expenditure		279,799

Internal Audit Services Branch

The objective of the Branch is to independently review operations of the Ministry and some of its agencies, and provide management with analyses, appraisals and recommendations concerning the activities reviewed. Audits are performed on the following:

All Ministry of Natural Resources offices
Thirty-eight Conservation Authorities
The St. Clair Parkway Commission
The St. Lawrence Parks Commission.

Budget and Program Analysis Branch

The Budget and Program Analysis Branch has the following responsibilities.

— Co-ordination of the review of the cost effectiveness of existing and proposed Ministry programs, and the provision of guidelines and assistance to program managers to facilitate program evaluation.

— Participation in the formulation of the Ministry's goals, objectives and program structures, and recommendation of changes in existing goals, objectives, program structures and output measures.

— Co-ordination of the program planning and priority setting process in the Ministry, and liaison with central agencies and Management Board of Cabinet and its Secretariat on all matters pertaining to Ministry estimates.

— Co-ordination of the negotiations with other ministries, e.g. Northern Affairs, Treasury & Economics, Culture & Recreation and Energy, concerning project proposals and cash flow for projects funded by these ministries on a cost-recovery basis.

— Compilation of the Ministry's annual budget submission from approved work plans in conformity with guidelines issued by Management Board.

— Issuance of funding allocations and output commitments relating to approved work plans, and exercise of control over unallocated funds.

— Co-ordination of the Ministry's in-year and year-end reviews of expenditures and outputs.

— Conducting reviews of administrative and control systems with a view to improvements in operating efficiencies and financial control, and testing the application of such systems.

Management Planning and Analysis

A Management Improvement Plan, designed to bring about major changes in the Ministry organization and operation, was announced on November 24, 1977.

The Management Improvement (now Management Planning and Analysis) Office was established on December 1, 1977, with the following objective: "To direct, co-ordinate and monitor the implementation of the Management Improvement Plan for the continuing improvement of management organization, systems and practices through 1980."

Twenty-five major tasks were initially identified for the management improvement function. These tasks included human resources (manpower) planning, program management evaluation, policy and planning, communications services and private sector utilization.

Task forces were set up to deal with the majority of the tasks identified. During 1979-80, the Management Planning and Analysis Office received task force reports on a revised policy and planning system, an expanded communications service and improved methods of dealing with the private sector. As a result of recommendations of a task force on management training and development, the Office initiated a series of Management Training Seminars for Ministry management staff.

A major objective of the Management Improvement Plan was the reduction of Main Office staff by approximately 200 positions by 1981. Progress toward this objective has been excellent. To date, 155 positions have been identified. In addition, the Ministry has approved the creation of 26 priority positions utilizing funding identified through the Main Office constraint program.

During 1979-80 a major reorganization of the Ministry's Finance and Administration Group was undertaken. The establishment of the new Administration Division was designed to provide an organizational focus for the comptrollership function in the Ministry, a key component of the Management Improvement Plan, and to enhance the provision of a broad range of management services to all levels of the Ministry organization.

Included in the Administration Division is the new Management Planning and Analysis Office which will assume responsibilities for completing the Ministry's Management Improvement Plan, as well as providing an ongoing review of the Ministry's management process and systems.

Systems Analysis

The objective of the Systems Analysis Unit is to ensure that controls and standards are followed in the design and development of data and word processing systems in the Ministry, and that systems fit into a Ministry-wide systems strategy which takes advantage of electronic data processing technology.

The Unit provides a systems and programming service to all areas of the Ministry. It also administers systems projects implemented by outside consultants and ensures that the SPECTRUM Methodology is used.

The Systems Co-ordinator is on the steering committee for all major systems development projects in the Ministry and involved in the selection of consultants, where necessary, to do the work.

The Unit ensures that Management Board directives for systems development are followed and liaises with Management Board when approvals are required. It also provides technical advice to management personnel and assists them in developing systems plans.

Mining and Lands Commissioner

The Mining and Lands Commissioner exercises judicial, quasi-judicial and administrative powers and duties under The Beach Protection Act, The Mining Act and The Mining Tax Act, 1972, and regulations made under The Ministry of Natural Resources Act, 1972, assigning powers and duties of the Minister to the Commissioner.

Judgments, orders and reports issued by the tribunal during the fiscal year were as follows:

Orders extending time for performing work or applying and paying for leases	1,046
Orders extending time for tagging	1
Orders authorizing special renewal of licences	74
Miscellaneous judgments, orders and reports	60
Total number of orders	1,181

Potential revenue from filing extension orders:

8,434 claims .....Prior to default	$42,170.00
794 claims .....Reflief from forfeiture	6,940.00
Total	49,110.00

Hearings under The Mining Act were held at Kirkland Lake, Sault Ste. Marie, Thunder Bay, Timmins and Toronto. Two appeals were held at Toronto under The Mining Tax Act, 1972. Appeals under The Conservation Authorities Act were heard at Hamilton, London and Toronto. One inquiry under The Lakes and Rivers Improvement Act was held at Kitchener.

Statutory Authority	Settled or Abandoned	Hearings Held
The Conservation Authorities Act	12	11
The Lakes and Rivers Improvement Act	4	1
The Mining Act	4	6
The Mining Tax Act	1	—
The Mining Tax Act, 1972	—	1
Total	21	19

During the fiscal year, the fifth volume of the series of legal reports entitled Mining Commissioner's Cases was collated, edited and published. This volume contains the more important cases respecting mining and mining tax matters heard and determined by the Mining Commissioner and the Mining and Lands Commissioner from 1969 to 1979; it includes matters transferred to the Supreme Court and decisions of appellate courts.

Agencies Associated With Ministry of Natural Resources

Agencies With No Financial Or Administrative Relationship

Board of Examiners of the Association of Ontario Land Surveyors
Council of the Association of Land Surveyors
Freshwater Fish Marketing Corporation
Lake of the Woods Control Board

Agencies With A Financial Or Administrative Relationship

(***Agencies which prepare an annual report.*)

** Algonquin Forestry Authority
** Canada, Ontario, Rideau, Trent, Severn (CORTS) Advisory Committee
** Conservation Authorities
Crown Timber Boards of Examiners
Port Hope Communications Committee (inactive)
Game and Fish Hearing Board
Geoscience Research Review Committee
** Niagara Parks Commission
Ontario Geographic Names Board
** Provincial Parks Council
Public Agricultural Lands Committee
Rabies Advisory Committee
** St. Clair Parkway Commission
** St. Lawrence Parks Commission.

Crown Timber Boards of Examiners

New Board(s) of Examiners are appointed every year in accordance with Section 32 of The Crown Timber Act. Each Board sets written and practical examinations in wood measurement and recommends successful candidates to receive a Scaler's Licence from the Minister. During the past year, two Boards were appointed from Ministry personnel. Following two Licence Scaling Courses held at Pembroke, the Boards examined a total of 158 students and recommended 126 to receive a licence.

Game and Fish Hearing Board

The Game and Fish Hearing Board is comprised of not more than five members who are appointed by the Lieutenant-Governor in Council. The function of the Board is to conduct a hearing following the refusal of a licence, usually for commercial fishing or trapping. The Board hears the evidence and delivers a written summary along with a recommendation to the Minister. In 1979 the Board dealt with approximately 30 refusals of commercial fishing licences.

Geoscience Research Review Committee

The Geoscience Research Review Committee was established in April, 1978, to advise the Minister on geoscience research priorities, and the merit and relevance of geoscience research proposals, as submitted to the Geoscience Research Grant Program of the Ontario Geological Survey.

The 11-member committee is comprised of representatives from industry, university and government. It recommends research goals, provides peer review, and recommends the awarding of grants to successful applicants. Under the program during the past year, 27 research grants totalling $475,567 were awarded to nine Ontario universities.

Ontario Geographic Names Board

The Ontario Geographic Names Board was established under The Ontario Geographic Names Board Act, proclaimed April 1, 1969, as the authority over Ontario's geographical names (toponymy). The Board meets quarterly and receives the nomenclature submissions as prepared by its Secretariat (Nomenclature Section) — 2,552 during the past year. These are transmitted to the Minister as recommendations for approval. The approved names are disseminated to client agencies and become official for maps, charts, gazetteers, property descriptions, regulations, and related documents and publications. The Board deals with contentious issues and conflicts of interest affected by name selections.

The seven members of the Board include five persons from the private sector and two civil servants — the Surveyor General of Ontario and the Secretary appointed by the Minister. The present members were appointed September 28, 1977, for a term of three years.

Public Agricultural Lands Committee

Section 48 of The Public Lands Act provides for the establishment of a Public Agricultural Lands Committee under the Chairmanship of the Supervisor of Public Lands, a Section in Land Management Branch. The Committee includes representatives from main office and field offices and the Ministry of Agriculture and Food. It reviews all applications for public lands required for agricultural purposes. During the past year the Committee dealt with 15 applications, mainly from farmers wishing to enlarge their operations on Crown lands in Northern and Northwestern Regions.

Rabies Advisory Committee

The Rabies Advisory Committee was established in August, 1979, to advise the Minister on the scientific steps necessary to develop a suitable vaccine against rabies and an effective system for immunizing wildlife populations, especially foxes and skunks which are the main transmitters of rabies in the Province. A number of potentially suitable vaccines are being tested and evaluated.

The six members of the Committee represent the Ontario Ministry of Health, the federal Department of Agriculture and three universities — Queen's, Toronto (two representatives) and Waterloo.



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Annual Report 1981

Minister of Natural Resources



Government Publications

Fiscal year ending March 31, 1981

Annual Report of the Minister of Natural Resources of the Province of Ontario

TO HIS HONOUR
The Lieutenant-Governor
of the Province of Ontario

MAY IT PLEASE YOUR HONOUR
The undersigned begs respectfully to present to your Honour the Annual Report of the Ministry of Natural Resources for the fiscal year beginning April 1, 1980, and ending March 31, 1981



Alan W. Pope
Minister

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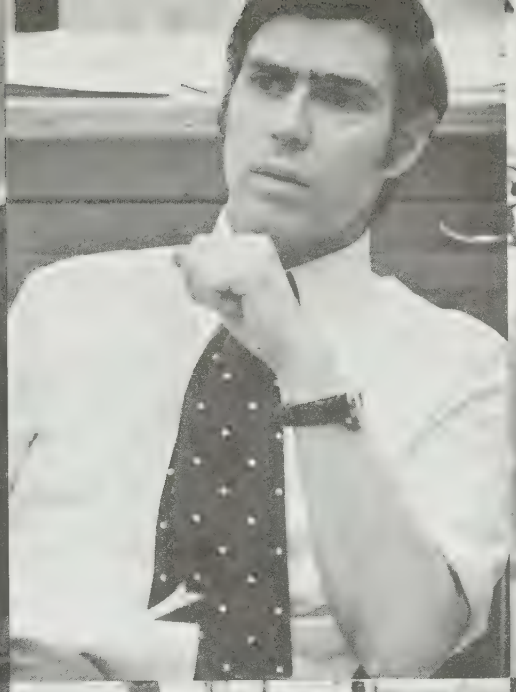
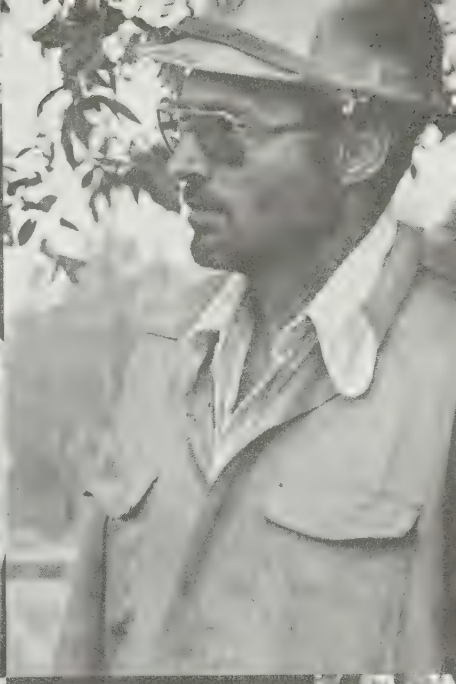
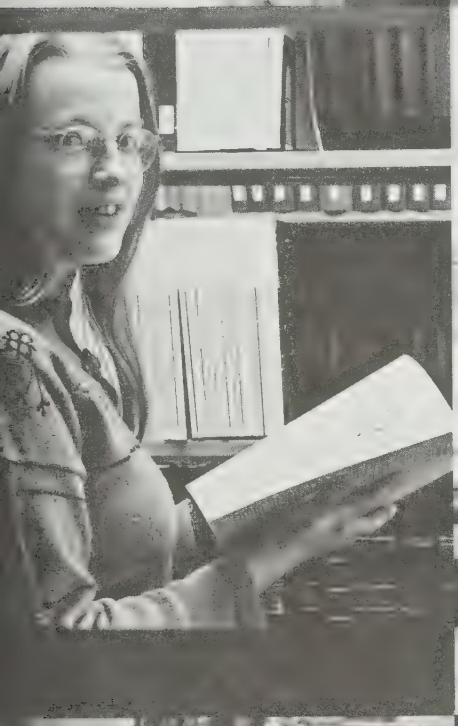
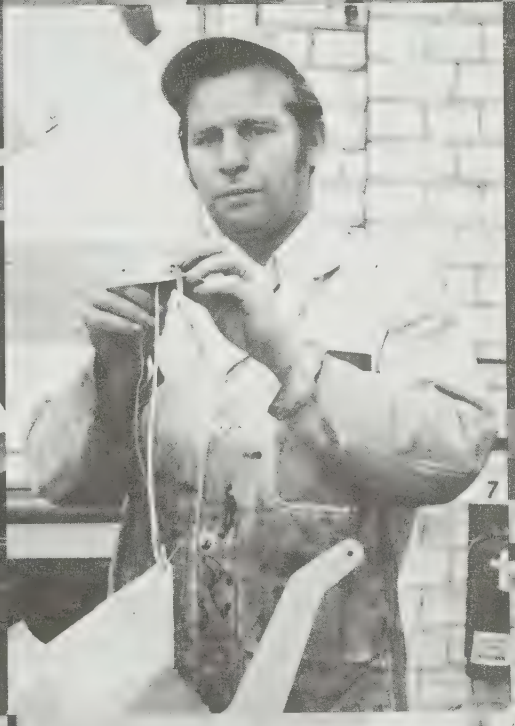
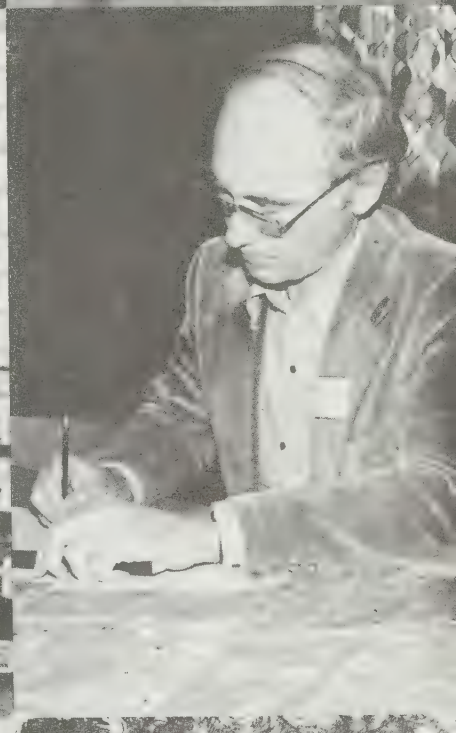
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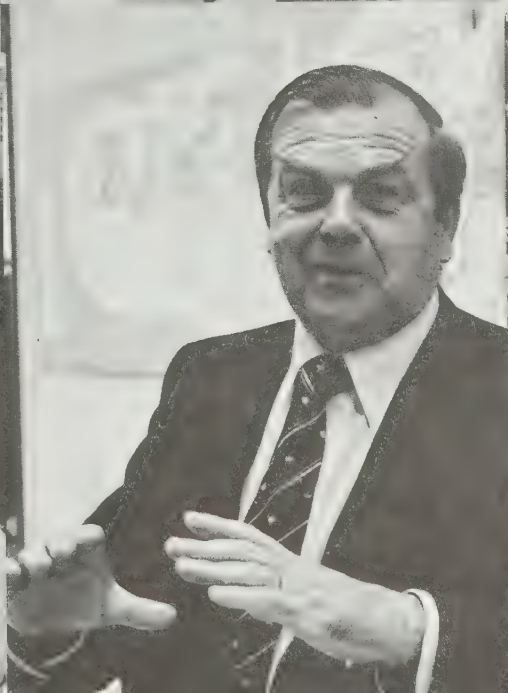
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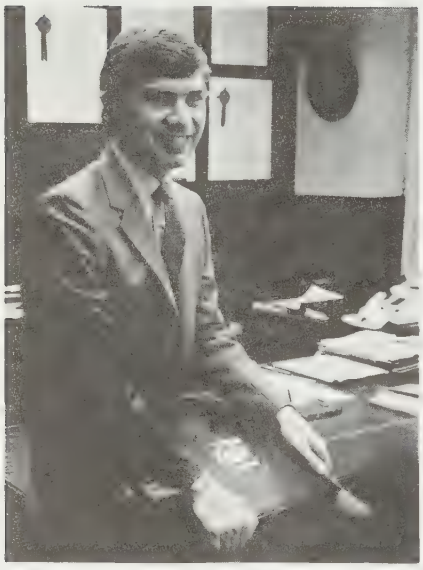
Front Cover: Helicopters play a major role in initial attack on forest fires—ferrying crews and supplies into position on fire lines. In 1980, 93 extra helicopters were pressed into service to fight the worst of the 1,779 fires in the province.

All photographs taken by Ministry staff.




Minister's Message



In April, 1981, I was honored to be appointed as Ontario's Minister of Natural Resources. I view the Ministry of Natural Resources as an exciting challenge because of the breadth of the Ministry's mandate and the vital importance of natural resources to the economic and social well-being of the people of Ontario.

To ensure that Ontario residents receive the greatest continuous benefit from their natural resources, the Ministry takes an integrated approach to resource management. Different combinations of uses of the various natural resources in a given geographical area are evaluated; the option which produces the most overall benefits is adopted.

The Ministry applies this management strategy directly to Crown lands, where it has administrative responsibility, and encourages municipalities and private land-owners to apply it to privately owned land.

Benefits from the use of the province's natural resources are many. Examples for the fiscal year ending March 31, 1981 include:

- The value of shipments from forest-related industries was just in excess of $6.0 billion; exports were $2.0 billion and employment 78,000 jobs.
- The total value of mineral production in Ontario was $4.68 billion, and mining tax revenues reached a record high of $160.5 million.
- 3.2 million nights of camping and 5.5 million days of outdoor recreation occurred in our provincial parks; while 4.5 million days of hunting, 35.4 million days of fishing were enjoyed throughout the province.
- Expenditures by anglers were estimated to be $414 million, while over $230 million in gross sales, $132 million in income and 5,200 associated jobs were created by the Provincial Parks program and by expenditures of visitors to the parks.
- The value of the commercial fish harvest was $23.6 million, while the value of wild fur pelts and wild rice was $24.4 million.
- The Province received a total of over $22 million from tax revenues under The Mining Tax Act, Crown timber revenues and water power rentals.
- 225 cottage lots on Crown land were either sold or leased.

In carrying out its widespread resource management responsibilities, the Ministry often faces conflicting demands from many competing interests.

I would like to reiterate that my Ministry is committed to providing information to and consulting with the public on all issues of concern. It is my hope that this approach will lead to both better policies and to a greater public understanding of how and why the eventual decisions are made.



Alan W. Pope

Deputy Minister's Message



I hope you will welcome the changed look and style of our Annual Report for the fiscal year 1980-81. We made these changes so that we might communicate about our Ministry's program accomplishments in a more useful and interesting way to a broader audience.

As in any government ministry or agency, an annual report not only reflects the record of the organization for the year, but also describes what the people on our staff did to contribute to the economic and social well-being of the people of Ontario.

1980-81 was an unusual year in one aspect. The 1980 spring and summer was dominated by a severe forest fire situation in our Northwestern and North Central Regions. The outbreaks were so numerous and often so severe, normal MNR operations were disrupted across the province as Ministry staff from many locations were airlifted during the emergency to the program fire areas.

Thanks to the unrelenting efforts of the fire control people, and those who supported them, millions of dollars worth of property and resources were protected.

After the worst of the fire emergencies were over, our staff made special efforts to catch up on their normal work. So successful were they, that most of the Ministry production targets were eventually met.

I take what I think is pardonable pride in our Ministry people for their 1980-81 accomplishments. As always, our human resources and the energy and enthusiasm with which they carried out their responsibilities, were the key to our successful achievements.

During the last fiscal year, too, we improved Ministry services to the public in a number of ways. For example, prospectors' licences, staking maps and metal mining claim tags were made available in nine more districts and one regional office. Also, the season was extended in more provincial parks during fall 1980, because we introduced an honor system for registration, which worked well.

The Ministry also contributed significantly towards the government's goal of increased and more effective use of the private sector in our operations. Five Forest Management Agreements were signed, which assign silvicultural responsibilities to pulp and paper companies. This step will also bring together the harvesting and regeneration cycles so that our forests will be replenished more effectively for future generations.

Also towards working with the private sector, the Ministry developed a contracting guide to assist field managers in dealing with local contractors. And, moves were made towards getting private firms to get into tree seedling container production.

Finally, the Ministry of Natural Resources has a commitment to provide opportunities for outdoor recreation and resource development for the continuous social and economic benefit of the people of Ontario, and to administer, protect and conserve public lands and waters.

All in all, it is my hope that your reading of this report will enable you to understand better what the Ministry of Natural Resources does to fulfil this commitment to the people of Ontario.

W. T. Foster.



The Fires of '80: "A Superhuman Effort"

Aviation and Fire Management

Last year's forest fire season was one of the worst ever suffered in Ontario.

At the season's end, the tally was a total of 1,779 fires which devastated 558,468 hectares (1.38 million acres) of northern Ontario forest land—an area equivalent in southern Ontario terms to a block encompassing the Lake Ontario shoreline from Pickering to Oakville and extending as far north as Lake Simcoe.

Thunder Bay 46 in July, which burned 126,748 hectares (313,200 acres) was one of the largest fires ever recorded in the province. Kenora 23 was 113,515 hectares (280,500 acres) and for some tense days in June threatened the town of Kenora, coming within 12 miles of its boundaries.

Red Lake 14 a few weeks earlier covered 43,666 hectares (107,900 acres) and forced the evacuation from the town and nearby settlements of 3,640 people to temporary quarters in Manitoba. Ignace 27 in July was the same size, and was blazing at the same time that Thunder Bay 46 was growing in size.

But the huge fires were only part of the story. At the same time as they were burning, many smaller but potentially serious fires were usually ablaze as well.

The worst of the fire season was in the Northwest and North Central Regions, from early May to late July—almost three months. During June and July, the Ministry reduced normal operations to the bare minimum and cancelled vacations of all staff qualified to work on fire control and related support duties.

At the peak period, as many as 3,600 people were on active fire suppression duty. The majority of these were MNR staff, including those sent from other parts of the province. They were assisted by contract staff and specialists borrowed from other jurisdictions, such as the United States Forest Service.

It was a superhuman effort by all concerned.

Although many structures were lost, and valuable timber destroyed, our efforts are credited with saving millions of dollars worth of property and resources. No lives were lost in the communities and outposts threatened by fire, and few private homes were burned. The fatalities recorded were two lives lost in a helicopter crash during the Thunder Bay 46 suppression operations—a private company pilot and an MNR staff member acting as a helicopter technician.

By the end of the season (October 31), $56.9 million had been spent on all aspects of fighting the fires: $39.2 million more than budgeted. Regrettably, 55 per cent of the 1980 fires were caused by human indifference—through careless smoking, neglected campfires and negligent use of equipment in the bush.

Nature had thrown a nasty curve at us in terms of weather: a dry fall in 1979 and persistent warm, dry weather very early in the spring of 1980. Consequently, moisture-parched trees, the ground and the subsoil became tinder for the fires of late spring. These came with the severe and frequent lightning storms of early May.

And as is the pattern in that part of the province, lightning in the Northwestern Region accounted for 525 fires in early summer (as many as 60 starts were recorded in some 24-hour periods).

With so many starts, it was often impossible to muster sufficient resources to make an immediate initial attack on all fires—the best way to extinguish them before they become larger conflagrations.

The fires brought about one of the most active air operating seasons in history. In May and June, over 80 helicopters hired from the private commercial sector were pressed into service. These were not enough and a search came up with an additional four from the federal military and nine from the United States. Thirty-two of our fixed-wing aircraft were used in waterbombing operations, and these were augmented with more than a dozen planes from other provinces and private companies. Fire detection was carried

Aerial view of the tip of Thunder Bay 46, July, 1980: one of the largest fires on record in the province.

Firefighters arrive at base camp 292 after battling Thunder Bay 46.

Weary firefighter takes rest break at base camp after fighting Kenora 23 in June, 1980.





out by 21 light twin engine aircraft leased from private companies in Ontario. Eight of the Ministry's planes were used for other fire management duties.

Training on the Run

The severity of the fire season meant that training programs had to be accelerated to produce the crews for the fire lines. An additional 850 crewmen were trained in 1980.

Help came during the highest pressure period from a seven-man U.S. training team which instructed 100 crewmen in a 14-day session.

Many bush-experienced native people worked on fire suppression crews.

Women are playing an increasingly important role in firefighting and its support. Last year during the fire crisis, women worked long hours as telephone and radio operators, aerial fire detection observers, drivers, camp crews, dispatchers and clerks. In the Northwestern Region, one woman supervised a huge fire equipment warehouse and another was a maintenance mechanic. We're also beginning to see female crew bosses on fire crews. All part of the realization that a physically fit woman can handle just about any fire control job.

Focusing on the Hot Spots

It may look like a prank to a casual viewer, but when a fire crew mop-up team spots a tree tangled with adding machine tape, it's a signal to go into action. The tape has been dropped from a helicopter, flying over the fire burn area. The 'copter has an infra-red unit and is looking for "hot spots." Hot spots are areas that still retain potential fire hazard.

In the helicopter, one person operates the scanner (it looks rather like a video camera) while another monitors the black-and-white images on a small viewing screen. When bright white dots appear, the pilot is signalled so they can drop the tape for the ground crew. Thus hot spots can be located and extinguished quickly.

During 1980, several different types of infra-red equipment were tested. A portable unit that can be operated by one person on the ground also proved effective at locating hot spots on a fire's margin.

A high-altitude unit owned by a private firm was useful in detecting fire fronts obscured by thick smoke. This equipment is in a fixed-wing twin engine plane that flies over the fire at about the 5,000-ft. level. It produces fire maps on a paper strip and the information can be used in a variety of ways for firefighting.

Locating the Lightning Strikes

Since lightning strikes cause a high percentage of the fires (over one-third in 1980) in the province, it makes sense to look for a method of locating the actual strikes. The year 1980 was the third year of evaluation for the lightning locator installation in Northwestern Ontario. It has proven a valuable tool for plotting and preparing for lightning-caused fires and will continue in operation.

Antennas of the locator system are installed at Kenora, Red Lake and Sioux Lookout. The central processing unit is in Dryden. It's an electronic system that records ground strikes. (Earlier systems detected all strikes—cloud-to-cloud as well as cloud-to-ground—creating a confused pattern in storm area monitoring.) The central unit prints out maps of lightning activity for use in the district and region fire centres.

Aftermath of Kenora 23 in Gordon Lake area, where the fire destroyed some private property. Considering the size and number of 1980 fires, relatively few private structures were lost.



Fire technician at Thunder Bay 46 in July, 1980, requests helicopter drop of additional suppression equipment.



1980-81 Aviation and Fire Management Program Highlights

- A total of 1,779 forest fires burned 558,468 hectares (1.38 million acres) of Ontario forest land.
- The Ministry spent $56.9 million on managing the forest fire protection program in the province; $39.2 million more than was budgeted for.
- Thunder Bay 46 was one of the largest fires ever recorded in the province. It burned 126,748 hectares (313,200 acres).
- Fire activity caused one of the busiest air operating seasons in history. Over and above the 40 MNR aircraft dedicated to fire control, an additional 93 helicopters and nearly 35 other aircraft were contracted from other governments and private sources.
- The Ministry trained an additional 850 fire crew members (as well as the usual 725 in the normal training program) to fight the fires of 1980.
- At the peak fire period, as many as 3,600 Ministry staff were on active fire suppression duty.



Forest Resources Management

Last year 600 million cu. ft. of wood products were harvested from 197,000 hectares (488,000 acres) of Crown lands in Ontario. This wood is used by the forest industry to make all the wood and paper products that we use every day and to export to other countries.

In order to ensure a continuing supply of these products, the forest must be regenerated. This is accomplished by a variety of year-round activities including planting trees, gathering and sowing seeds, and encouraging nature to seed (with a little help from us). Young trees and plantations must be tended and protected from overtopping weed species to ensure growth of our future crop and the continuing success of our new forests.

To support this regeneration program as well as supply trees for private use, the Ministry grows trees in 10 nurseries located in key areas across the province.

Forest Management Planning for the Future

In Ontario, we have enough forest lands to supply us with the timber needed today for domestic use and for export. But it takes decades for most trees to grow big enough to cut. Will our children and grandchildren have enough trees?

Forest management planning is the means by which forest policy, aims and objectives are translated into a continuity of forest operations for a particular forest area. In Ontario, these forest areas are called Management Units. By planning and controlling forest operations on these units, the objective of providing trees for future generations is assured.

The forest management plans prepared for each unit provide the objectives and broad framework within which forest operations are conducted.

The objectives are based on a thorough knowledge of the forest conditions of the management unit: for example, its physical features, tree species, history and industrial use. Projected demand and the need to provide for other uses of the forest are also considered.

More detailed operating plans for shorter time periods identify the forest operations to be conducted to meet the objectives.

These operating plans indicate the timber stands to be harvested, regenerated and tended, and the roads and other improvements required on the unit.

Work planned and work done is recorded in ledgers and on maps, providing us with the means of determining how well we have met our objectives.

Co-operative Agreements for Future Forests

The Forest Management Agreement (or FMA) is a major prong in Ontario's long-range campaign to regenerate our forests for the future.

Under an FMA, the forest company harvesting a tract of land under licence from the Ministry, must also carry out forest regeneration, forest tending and associated road construction. And all these activities must be done to meet the specifics of both the agreement and a forest management plan jointly developed by the company and MNR. Silvicultural treatments are paid for by the Ministry, at its cost for equivalent work, and the road construction and maintenance program is subsidized by the Crown. The principle followed is that the most efficient forestry practice is for harvesting and regeneration to be done as integrated steps. In fact, cutting trees is considered the first step in the regeneration process.

The first five of these FMAs were signed during the last fiscal year.

The initial agreement was with Abitibi-Price Inc. covering the Iroquois Falls Forest. Two agreements were signed with E. B. Eddy Forest Products Limited covering the Upper and Lower Spanish Forests. Great Lakes Forest Products Limited signed to cover the English River Forest near Ignace. And an agreement was signed with Spruce Falls Power and Paper Company Limited for the Gordon Cosens Forest near Kapuskasing.

Ministry adviser and private landowner examine seedlings in holding bed. Under Woodlands Improvement Act, over 9,000,000 trees were planted during 1980.

Signing of first Forest Management Agreement, April, 1980. Left to right: Ken Armson, Chief Forester, MNR; Hon. James A.C. Auld, former Minister, MNR; R.C. Gimlin, President, Abitibi-Price Inc.; T. J. Bell, Chairman of the Board, Abitibi-Price Inc.; J.K. Reynolds, former Deputy Minister, MNR.



Under the terms of the agreements, each company will manage these Crown forests for a 20-year period. The company will carry out regeneration, tending, road construction and timber harvesting.

Annual allowable cuts of the forests will be calculated every five years and each company's performance will be appraised every five years as well, to ensure that the FMA is being fulfilled. If satisfactory, the term of the agreement will be extended for another five-year period.

The impact of the agreement program was immediate. Companies began staff reorganization to interrelate harvesting and regeneration functions and to improve mechanization techniques. MNR nurseries, to answer the increased demand for seedlings from the companies, began to expand production.

It is expected that the majority of all anticipated FMAs will be signed by 1985 and will comprise a total of about 30 agreements.

We Manage Private Forests, Too

Another method by which MNR's forest resources staff ensures good forest management in Ontario is through The Woodlands Improvement Act. The WIA covers privately owned lands, which are mainly in the southern part of the province.

The Act provides for the Ministry to do the managing of the forest portion of a private landholding—if the owner agrees. In this way, MNR is able to maintain the high standard of forest management required to get the most from the woodlots in private hands.

Last year, 802 WIA agreements were signed, bringing the total in operation up to 8,523. Ministry forestry workers planted over nine million trees on these lands during 1980.

Local governments and agencies which own land also enter into forest agreements with the Ministry. Last year, throughout the province, 60 forests were managed by the Ministry under agreements with conservation authorities, counties, townships and others. Management of these forests is especially important in districts that do not have much Crown land.

The Ministry also provides an advisory service for private land-owners to encourage them to improve and manage their own forests properly. The service is free and offers advice on planning and establishment of tree plantations, tending of woodlands and marketing of timber.

Every Tree Counts

An Ontarian, stuck in a traffic jam in downtown Hamilton, Windsor, or Ottawa might wish to be away in a peaceful woods at that moment, but would he or she realize that 80 per cent of Ontario *is* the woods?

And that, especially in the north, much of it is Crown forest administered by MNR's forest resources staff? And that we try to keep track of just about every stand of trees so that timbering can be controlled and regeneration ensured?

During 1980, to maintain a continuous inventory of forest stands throughout the province, aerial photographs were taken on an ongoing basis. To add detail to the aerial pictures, field sampling surveys called "cruising" the forest were also undertaken. Experts studied the aerial photographs and interpreted what they saw to produce estimates of tree species' age, height and area. All the data was then fed into a computer to be used for long-range planning of forest management.

Last year work was begun on a computer model in which the inventory can be used for much faster and more detailed and sophisticated long-range planning.

The model will provide descriptions of the forests that will result 20, 30, even 100 years in the future. The effects of alternate timber cutting and regeneration plans can be entered into the model as can the potential influence of fire, insect and disease damage. With the aid of this tool, the forestry staff can effectively plan the future of not just Crown forests but privately held stands of trees all over the province.

The aerial photographs and maps were also available to other government agencies, to industry or members of the public who use aerial views of private property for planning purposes.

Tallying the Timber Crop



Scaler measures cut timber to determine price company will pay for timber cut on Crown land.

The harvesting of timber on Crown land is undertaken by private industry under licence issued by the Minister. Last year there were 548 active timber licences covering 224,225 sq. km (94,332 sq. mi.) of forest.

The Timber Sales Branch staff decide on the harvest each licensee will be allowed, taking into consideration such things as geographic area, kinds of trees, volumes of trees, stumpage payments and harvest control measures.

When the wood has been cut, another specialist—a timber scaler—tallies the harvest to ensure that proper fees are paid for the timber cut.

There are over 2,000 licensed scalers currently in Ontario, and graduates from government-regulated courses add about 150 every year. The courses are rigorous and, to ensure that the wood measures are up-to-date, the scalers must take refresher courses regularly. Scaling is done by both men and women.

Last year, the change-over to reporting all measurements in metric units was begun. Total metric measurement should be in force by 1982.

It Starts With a Seed

Any gardener knows that you put a seed in the ground, nourish it, tend it—and watch it grow. This can also be a method for growing trees, but then there's the jack pine.

Jack pine is the great regenerator of burnt-out forests. In fact, heat is what makes the cones open and release the seeds. But jack pine can also be seeded successfully from an aircraft. If the seed is sown in the spring, it will sprout immediately; if sown in the fall, it will germinate the following spring. Last year, the Ministry sowed nearly *two billion* jack pine seeds to regenerate fire-ravaged and denuded areas in the province.

Ministry silviculture programs also see to the collection, storage and dispersal of the seed crops of our trees. During the warm months, busy hands pick the cones and seed of all species of Ontario trees. Only the black spruce seed collection has a mechanized process which involves feeding branches into a combine that separates the cones and makes them ready for normal seed extraction.

The collections go to two Ministry seed extractories (one handles jack pine exclusively) where the seeds are removed from cones or cases and then stored until required. Last year, the inventory of the seed warehouse was 5.3 billion seeds valued at approximately $3 million.

In 1980-81, a further 375 million seeds were used for nursery or container stock production and for seed research.

Research Programs Lead to Better Forests

In the long continuum from planting to harvesting of a woodland, many groups and individuals are involved in the teamwork necessary to keep the forest healthy, productive and operating at its optimum level. Not only are there the foresters who manage the woods, and those who compile and analyse forest data, but there is also a whole spectrum of scientific researchers and practitioners who study and develop ways to make trees healthier and more productive.

Forest research has, over the years, proved to be a very important adjunct to forest management. Because many studies have to be long term, with results not expected overnight, progress is steady but unsurprisingly slow. In a few cases, projects begun 25 and even 35 years ago are only now yielding important data and results.

Last year MNR researchers worked on a great variety of projects. One important area was work on selecting tree species for preferred characteristics: fast growth, stem development, winter hardiness. Programs using controlled pollination to increase seed production also had high priority.

Foresters have developed ways to preserve the gene pool and propagate trees from existing stands of native trees to assure the continued life of this breeding stock.

Methods of extending planting seasons to increase the number of trees planted, to improve the soil chemistry and many other facets of tree planting were concerns in Ministry labs and nurseries.

Scientists gave consideration to all species, though those that have high potential for timber crops were emphasized: hardwoods for wood products and softwoods for pulp and paper manufacture.

Pest and environmental control and nursery research also played a part and will continue to produce new data as research continues to keep pace with forestry's steady growth into the future.

Poplar No Longer a Weed

Most Ontario trees take a long time to mature. But not so for all of the poplars. Although disclaimed in some areas as a "junk" tree, the quick-growing kind has many uses other than the production of fibre, including planting as "nurse" trees to protect other seedlings during early growth or as windbreaks or cover foliage.

Results of Ministry research on hybrid poplars—trees deliberately cultivated for even faster growth, greater yields and other desirable qualities—have shown that these hybrids have great potential in several areas, besides providing fibre for eastern Ontario pulp mills. They can also be used as energy fuels or cattle fodder and in the manufacture of adhesive products, and to produce artificial sweeteners.

To create a hybrid poplar, shoots are taken from both male and female poplar trees selected for certain desirable characteristics. The shoots are kept in pails of water in a greenhouse, and when they blossom, are artificially cross-pollinated by hand with a brush. After three to four weeks, the female blossoms will produce seed from which the new hybrid will grow.

The most favorable plants are used to start a hybrid plantation (based in eastern Ontario locations such as Kemptville and Brockville). And they do grow quickly.

Some varieties can grow to a height of 10 to 12 feet in one year and be nearly a foot in diameter at age 10. Though you can grow hybrid poplars by sticking stem sections of a certain length into the earth, research is under way on planting smaller lengths of poplar horizontally in shallow trenches. This offers some promise for mechanized planting.

The success of the poplar program has led researchers into similar studies of a related tree—the willow—also a fast grower with some potential as an energy substance producer.

No Ordinary Trees Need Apply

White spruce are valuable pulp and paper trees prevalent in northern Ontario. Their natural occurrence in southern Ontario is pretty well limited to surviving natural forest stands in scattered areas.

Much of the natural genetic stock that once populated our forest has been lost over the centuries, especially in southern Ontario. It is necessary to preserve those trees that remain so that the genetic material is retained for posterity and can be used as a basis for breeding. Such stocking trees are known as gene pools. An inventory of the existing stands in southern Ontario was done in 1980.

Last year, a similar program for selection and improvement of black walnut stands in southern Ontario was begun. This project requires a very careful inventory to choose superior trees for producing future stock. Propagation is by grafting on root stock. Seeds produced will be planted and the best seed progeny will be kept in a gene bank.

Surveys to locate and select superior stands of white ash have led to a similar program of tree development for this species. Again, by propagating the best trees, a gene bank will be established from which seed orchards will be planted.

Hardwood Stump Sprout Regeneration

After hardwood is cut, or after a forest fire, stump sprouting can account for a great part of the reproduction of the forest. Many hardwood species can be reproduced by stump sprouting relatively simply, quickly and inexpensively, thus providing supplemental stock for regeneration.

An MNR study in 1980 looked at sprouting, following tree cuttings in a red oak/white ash/sugar and red maple stand in Huronia District the year before. The stand was 60 to 80 years old. Some of the findings: the older and bigger around the tree, the less it tended to sprout (only one in 10 of the 80-year-old red oaks produced sprouts). White ash and red maple stumps sprouted more frequently than red oak.

A number of factors influencing sprout development need to be studied—season

Forest research scientist uses oscilloscope to test conifer seedling for dormancy.



of cut, height, bark thickness, sprout number, size and location and incidence of decay fungi—and results must be correlated to give guidelines for this kind of regeneration. But, given specific methods of treating sprouts, it may be possible to produce a new stand in this manner.

Testing Seedlings for Dormancy and Frost Hardiness

Early spring is a particularly busy time for MNR nursery workers and planters. During the few short weeks of the best planting conditions, some 60 million bare root seedlings must move through the various stages between removal from the nursery bed to eventual planting in the forest.

A great saving in time and manpower can be achieved if the trees don't have to be harvested from the nursery, then graded and packed, as well as being transported and planted during this short period, but can be simply retrieved from cold storage, ready to plant.

Some of the nursery operations could then be done in the fall, and for the best survival of the stock, would be done when the seedlings have reached their natural winter dormancy stage.

MNR research staff have been working on several methods to test the young trees in order to develop a standard method of identifying the period when they have entered the dormancy phase. They are also concerned with testing for frost hardiness in the seedlings, which is linked to dormancy.

In 1980-81, work was well under way on a program to test for dormancy by monitoring the changes in the amino acids present in the root and needle tissues of conifers. An extraction technique was developed.

Amino acids were extracted from the seedlings weekly during the fall and compared with material extracted during other periods. Preliminary findings indicated that distinct amino acid patterns occur. Once a consistent pattern is established, a standard test can be developed for determining a seedling's degree of frost hardiness and its stage of dormancy.

The Effort to Control a Persistent Pest

It's just an insignificant, buff-colored moth floating—with thousands of its fellows—through a northern forest. Yet this harmless-looking insect produces a terrible child. Laying its eggs on the inviting needles of conifers in August, the moth dies. The larva that emerges in the spring and immediately begins munching its way through the balsam and spruce needles, is the spruce budworm and it's been plaguing our forests for decades.

By late spring, each tree can have thousands of the budworm caterpillars defoliating and eventually killing the tree. Though only an inch-and-a-half long when fully grown, the budworms have voracious appetites. They have already destroyed about 60 per cent of balsam in northeastern and northern regions. Not content, the budworm has turned

Spruce budworm (actual size is about an inch-and-a-half long) is subject of MNR pesticide spraying program to save balsam and white and black spruce forests.



to destruction of the more valuable white and black spruce.

So far, no one has been able to explain periodic plagues of budworm (the last big one was in the late 1940s and early 1950s). But Ministry staff members are beginning to control the horde through the yearly spraying program. Last year brought the best success in 12 years, achieved through a combination of expertise, good spraying weather and an effective combination of pesticides.

The 1980 aerial spraying program covered forests in the Kirkland Lake, Parry Sound, Chapleau, Gogama, Cochrane, Kapuskasing and Hearst districts. Fourteen spruce seed producing areas and one wildlife management area were in the spray zone. Both chemical and bacterial insecticides were used. The bacterial insecticides contain a bacterium specific to the budworm, that kills on ingestion; the chemicals kill through contact or ingestion.

Thirty days before the spraying began, the public in each area was notified and residents were invited to go into the regional office to discuss the program. Sprayed areas were all posted.

After spraying, evaluation teams went into the forest immediately to monitor results. In all cases, findings showed effective elimination of budworm with no hazard to human health and no significant damage to wildlife.

MNR's forest resources scientists have also begun to examine methods for biological control of the pest. These are long-term programs, because even when this infestation is over, the budworm will be back in a decade or so. Since the budworm has little potential for sterilization methods, the pilot field projects are investigating use of budworm parasites, predacious insects (ants, wasps) and nesting birds (chickadees, warblers) as methods of control.

Prevention and Control of Other Pests

Surveillance is an important part of pest control. Knowledge of what to expect, watching for its incidence and being ready to combat it when it appears, all contribute to the effectiveness of the program. A good example is *Scleroderris canker*. The European strain of this fungus has infested red pine plantations in New York state and parts of Quebec, causing severe damage to the trees. It has not yet border-skipped into Ontario, but the pest control units are alert to the possibility. Co-operative federal-provincial programs helped maintain the surveillance in 1980.

Since trees cannot be vaccinated to prevent the fungal attack, control will be rather similar to the method used to eliminate smallpox from the world. Once infestation is sighted, teams will enter the area and deal with the local outbreak to keep it from spreading. In this way, widespread infestation can be prevented.

Pest control dealt not only with insect and organic pests last year, but also was challenged by rodent (mice and rabbits) assaults on young trees during the winter. If rodents are not controlled, considerable damage can be done to valuable young timber. The creatures eat the bark around the trees at the snow line and this "girdling" around the tree can be serious enough to kill it.

BILD Funds to Improve Forest Management

Technician measures test hybrid poplars to determine which nutrients produce best trees in shortest time.

The Board of Industrial Leadership and Development (BILD) program, announced in January, 1981, established a new economic development strategy to consolidate and co-ordinate the government's total economic development. BILD is a Committee of Cabinet with a $1.5 billion budget aimed at creating jobs, reducing inflation, increasing trade and improving productivity. It will work on joint projects with other governments and private interests, as well.

As an adjunct to existing forest management programs, $10 million has been earmarked by BILD to be used to improve southern Ontario woodlots and stimulate development of pulpwood and high-quality sawlogs. In the north, $25 million will be used in the management of Crown forests not under Forest Management Agreements.

Immediate effects of this impetus will be an increase in the availability of fuelwood for Ontarians in these energy-conscious times, and the creation of jobs in forest and forest-related areas.

BILD is also funding a $10 million program to improve MNR's tree nurseries. Seedling production will be increased across northern Ontario and improvements will be made at most provincial nurseries. Implementation of the Forest Management Agreements between the Ministry and industry will increase the demand for seedlings for forest regeneration, so construction of new nursery capacity and enhancement of existing facilities is most timely.



1980-81 Forestry Program Highlights

- The Ministry supervised the regeneration of almost 102,000 hectares (251,000 acres) of forest.
- Our nurseries produced 75.9 million trees.
- Agreements with private landholders under The Woodlands Improvement Act increased by 802 to 8,523, bringing 144,779 hectares (357,748 acres) under agreement.
- In agreements under The Forestry Act, over 110,000 hectares (272,000 acres) were managed.
- The Ministry supervised the aerial spraying of herbicides and insecticides over 36,422 hectares (90,000 acres) in the province.
- A major review of private land forestry in Ontario was initiated.



New OMEP Program Assists Mineral Exploration

Mineral Resources Management



Maps and data produced by MNR geological surveys and MNR regional resident geologists offer exploration assistance to the individual prospector as well as to large companies.

Geological field team examines core sample. Such surveys provide clues to mineral deposits by revealing nature of soil, clay, glacial till, sand, gravel and underground rocks.

The tradition of encouraging mineral exploration in Ontario is a long and successful one. The latest initiative was the introduction in September, 1980, of the Ontario Mineral Exploration Program (OMEP), an expanded approach for revitalizing mineral exploration.

OMEP replaced the Mineral Exploration Assistance Program (MEAP) which had operated successfully for 10 years.

The new program offers risk capital and other incentives to encourage exploration. It is available to qualified individuals and companies not directly engaged in mining activities. Individuals can receive grants equal to 25 per cent of exploration expenses and companies can ask for tax credits equal to 25 per cent of exploration expenses.

Between its September inception and the end of March, 1981, OMEP received 138 applications. Of these, 94 projects totalling $33.9 million in planned exploration expenditures were approved for assistance. A total of $1.4 million in grants/tax credits were paid in 1980-81 for the seven months the program was operational.

With the stimulation of the OMEP program, Ontario should witness an increase in exploration in 1981-82 which will encourage new mine development, create jobs and provide economic impetus, particularly in the northern part of the province.

Mining Taxation Offers Incentives to Producers

In 1980-81, the total estimated value of the province's mineral production to be assessed and audited under The Mining Tax Act exceeded $4.5 billion ($3.27 billion in 1979-80.

This amount of production resulted in a record tax revenue in 1980-81 of more than $160.5 million. The tax is determined by the Mine Assessor by appraising the value of output at the pit's mouth.

The Mining Tax Act also provides incentives to mineral producers to encourage exploration, production and processing in Ontario.

Incentives for exploration and development allow a 100 per cent writeoff of expenditures incurred in the province. The processing incentive gives capital cost of processing assets, based on the degree and location of the facilities.

These incentives have been instrumental in stimulating mineral companies to make major investments in Ontario.

Geological Survey Teams Look for Clues



Examining rock sample, student participates in survey team's efforts to locate potential mineral deposits.

MNR's Ontario Geological Survey has been mapping and studying the surface and below-surface mineral resources of Ontario for nearly 100 years.

Last summer, 51 field survey teams scoured the rocky landscapes to pinpoint potential places where commercial exploration for metals and rocks might best occur.

Many university students are employed as summer assistants on the various geological survey projects. Last year the Ontario Geological Survey hired nearly 140 university students on several OGS programs.

To date, only seven per cent of the province's Precambrian geological profile has been mapped to modern standards of detailed scale.

Through mapping, then analysing the results of their studies of the earth's surface, glacial deposits and bedrock, MNR geologists produce data that is useful in two areas. Using sophisticated scientific equipment and applying up-to-date geological concepts, they look for indicators that may lead to the discovery of base metals; gold, silver and other precious metals; sand, gravel and stone for construction; uranium, peat and oil for energy.

Inventories are also made of these resources and the geological information contained in them enables better land use planning.

Some current projects under way are: the tracing of river valleys more than 2 billion years old that may contain deposits of gold and uranium comparable to those in South Africa; the analysis of large gold-bearing fold structures formed more than 2.6 billion years ago by continents grinding past one another along faults much like the San Andreas Fault in California; the unravelling of the complex geology of the Sudbury Basin and its rich ore deposits believed to have formed by meteorite impact 1.8 billion years ago.

Last year's published reports and seminars on the structures controlling metal distribution in the Sault Ste. Marie-Sudbury-Cobalt region have reawakened interest in a dormant area, with several substantial exploration programs in progress.

Results of the OGS projects are designed to help not only the exploration and mining companies (Ontario leads Canada in the production of cadmium, cobalt, gold, nickel, silver, uranium and zinc and is the sole Canadian producer of calcium, magnesium, platinum and nepheline syenite) but also the individual prospector.

MNR staff also help municipal planners in southern Ontario, particularly in respect to aggregates—sand and gravel deposits. A great number of geological advisory services are available to the public and many comprehensive publications are issued yearly—a total of 430 maps, reports, studies and papers last year.

MP 77, Index to Published Reports and Maps, Division of Mines, 1891 to 1977 and Supplements, is updated every year to list all OGS and Mineral Resources Branch publications by document number, author name and geographic entity. Other reports updated each year for reference purposes are: Summary of Field Work, Annual Report of Regional Geologists, Oil and Gas Papers and Rocks and Minerals Information.

Mineral Reports Published

Although Ministry programs encourage the search for and the development of the province's mineral resources, MNR also acts as the custodian of Ontario's mineral potential.

Management must be flexible, stimulating growth when needed and guarding against excessive regulations.

By examining Ontario's metal and industrial mineral resources and production in light of world market developments and trends, and by developing sound policies that take into account technological, environmental and economic factors, the health of our mineral resource sector can be maintained.

To this end, reports, studies and statistics on metallic minerals and market conditions are produced—to provide background information for government, industry and universities.

Over the past few years, several commodity studies have been published as Mineral Policy Background Papers. Zinc, nickel and platinum have been covered. Work was completed, in 1980, on studies on uranium and gold.

New BILD Program Encourages Mineral Development

In March, 1980, The Board of Industrial Leadership and Development (BILD) announced several programs to stimulate mineral exploration and research.

One is a $10 million project to facilitate the construction of custom gold milling facilities in several areas of Northern Ontario.

Another program will establish 11 drill core libraries across the province at a cost of $5 million. Permanent storage and retrieval of drill cores will save exploration costs by reducing the need to re-explore and re-drill in specific areas.

Industrial mineral exploration will gain new impetus through a new program of loans and grants in a five-year $7.7 million program to encourage search and development of phosphates, silica, talc, potash feldspar, magnesite, mica, whiting, barite, building and ornamental stone and kaolin.

Ontario's own energy resources will be assessed by a $12.6 million, five-year BILD program. Known as the Hydrocarbon Energy Resources Program, it will include an evaluation of lignite deposits in the James Bay Lowland, an inventory of peat deposits in the entire province, and an investigation of possible oil shale deposits in southern Ontario.

BILD is also financing a "technology breakthrough" fund to help private companies develop new ways to locate now-undetectable mineral deposits.

Outside Funds Expand MNR Programs

A geoscience survey program jointly sponsored by the Ministry of Natural Resources and the Ministry of Northern Affairs stimulated exploration activity in the Atikokan area following release of geophysical maps in January, 1981.

By February 2, within weeks of the release, more than 800 claims had been recorded.

The survey included an engineering terrain study, an aggregate study, bedrock mapping, mineral deposit studies of gold and base-metal occurrences, an airborne geophysical survey and preparation of data series maps.

The survey also led to the discovery, in July, of a highly promising gold vein—the Bernie-Mitch vein—named after the MNR geologist (Bernie Schneiders) and the prospector (Mitch Witcheruk) who found it.

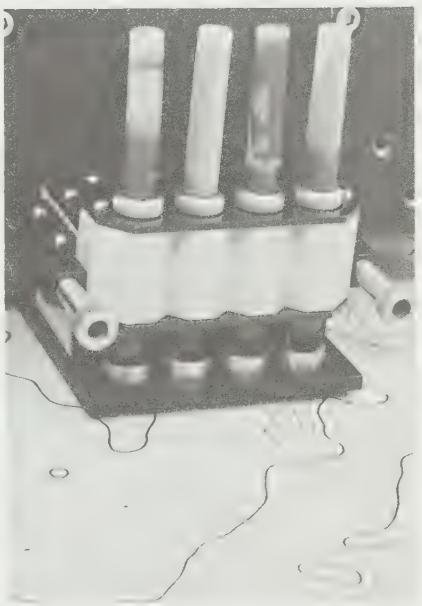
KLIP Program Boosts Exploration in Kirkland Lake

Special studies and mapping of the Kirkland Lake area have led to an exploration boom in that area. The Kirkland Lake Initiatives Program is funded by the Canada Department of Regional Economic Expansion and by the Ontario Ministry of Northern Affairs—but all technical portions of the program are handled by MNR's Ontario Geological Survey.

The surveys are exploring known gold areas to see if detailed knowledge of the geology can help in locating new finds. Sampling studies of certain types of glacial deposits show promise of locating the source of glacially-buried mineral deposits. Deposits of aggregates have been located in several areas and surveys with drilling and other sampling equipment look promising.

Focus on Northern Resources

A five-year study of the geology of Northern Ontario, appropriately called the Northern Ontario Geological Survey Program, completed its third year in 1980. Funded by the Ministry of Northern Affairs, the projects consist of various mapping and commodity studies to encourage mineral exploration.



Up-to-date equipment, such as this automatic map plotter, which produces four-colour contour maps, enables MNR to publish hundreds of maps each year.

MNR's Ontario Geological Survey coordinates these projects.

The Study is looking into some previously unexplored areas and is also zeroing in on the Atikokan, Cobalt-Gowganda, Sudbury and Manitoulin Island areas. Localities with potential for both metal-producing and industrial minerals are being sought out. The survey has located high-quality dolostone resources on Manitoulin Island, and already their development has begun with the opening of a large quarry near Meldrum Bay.

Prospectors and other interested parties have been eagerly purchasing maps from an extensive airborne survey last year of the Manitou-Stormy Lake, Wawa and Caribou Lake areas.

New Reports on Pembroke-Renfrew

Five new reports on the Pembroke-Renfrew Geological Survey (begun in 1976) were issued in 1980-81. The survey is encouraging exploration and resource management in the area and, to date,

Towards Legislation on Pits and Quarries

favorable results have been experienced.

Funded by the Canada Department of Regional Economic Expansion and the Ontario Ministry of Treasury and Economics, the MNR survey has produced three earlier reports and six maps. A booklet publicizing the program, and two final reports are on their way.

First Detailed Precambrian Maps of Southeastern Ontario Areas

A program to chart the resources of an area of southeastern Ontario (Renfrew, Hastings and other eastern counties) has resulted in the first geological maps of the very old (Precambrian) rocks in Belmont and Methuen Townships and the Ardoch Lake area.

Several survey teams have been mapping and doing industrial and metallic mineral studies as well as aggregate resource assessments. An airborne geophysical survey and an engineering terrain evaluation are also under way. Last year, a number of areas with abundant coarse aggregate deposits were located.

The program is funded by the Canada Department of Regional Economic Expansion and the Ontario Ministry of Natural Resources under the minerals program of the Eastern Ontario Subsidiary Agreement.

Search for Industrial Minerals in North

A large-scale survey for deposits of industrial minerals (such as talc-magnesite-asbestos) is part of a long-range (five-year) program begun in 1979 with funds from the Ministry of Northern Affairs. Six projects of a scheduled 10 are under way in this Northern Industrial Minerals Survey.

Studies of deposits of nepheline syenite, potash feldspar and silica have led to staking, property acquisition and further study by commercial firms.



During 1980-81, the rehabilitation security deposit was raised to eight cents per tonne (metric) from the previous two cents per ton rate to provide greater encouragement for sand, gravel and limestone extracting companies to rehabilitate worked-out pits and quarries.

Concurrently, all of the townships were designated in the Southwestern and Central Regions and in most of the Eastern Ontario Region, to ensure uniform administration of The Pits and Quarries Control Act.

Also during the year, much effort was made towards getting legislative approval of the proposed Aggregates Act, which would strengthen The Pits and Quarries Control Act (1971). The proposed new act received second reading in December, 1979, following which the Standing Committee for Resources Development heard representations from members of the public and interested organizations. Over a hundred amendments were tabled as a result.

It is hoped that the proposed Aggregates Act will receive legislative approval during the 1981-82 year.

Facelifting the Land to Cover the Scars

Deposits of sand, gravel and rock that can be crushed into stone (aggregates) are important economic assets to a community. They are also a leading part of Ontario's mineral production.

With an aggregate deposit nearby, a community has handy building materials and a source of jobs and revenue. However, there's a price to be paid.

The resource is non-renewable; largely the result of the last ice age. More sand, gravel and stone will not grow to fill the holes in the landscape.

Consequently, under The Pits and Quarries Control Act, administered by the Ministry, a program exists to encourage and enforce rehabilitation of these areas and already much has been done.

The Act specifies that while a pit or quarry is in operation, the operator must plant trees and foliage to screen the operation. Progressive rehabilitation is encouraged during the phases of the excavation so the whole job won't have to be done afterwards.

A rehabilitation security deposit is required of the operator to help recoup

Before and after photos of rock quarry demonstrate how rehabilitation programs are able to return pits and quarries to pleasing landscape—or even recreational facilities—after use.



the costs of changing open pits and quarries back into a gentle, rolling landscape. This is the deposit which was raised from two cents to eight cents per metric tonne last year. This deposit earns interest and the operator can get a yearly refund if he has complied with the terms of the rehabilitation program.

All of southwestern, central and most of eastern Ontario are governed by the Act. There is also a related program to rehabilitate pits and quarries in the province that were abandoned after past operations.

Counting the Aggregates Supply

Another program under way is to take inventory of the aggregate resources (sand, gravel, stone) of all municipalities in southern Ontario.

During the year, Engineering and Terrain Geology teams published 29 Aggregate Resource Inventory Papers (ARIP). By keeping track of this non-renewable resource, future planning and rehabilitation will be facilitated.

Last year, with the help of funds provided by the Ministry of Northern Affairs, the ARIP surveys expanded to include North Bay, Hearst and Kapuskasing.

The Costliness of Long Distance Gravel

An independent study commissioned by MNR to find out if it was economic to transport sand, gravel and stone into Toronto from further reaches of the province, proved that it would be very expensive indeed.

Results of the study, released in March, 1981, showed that it would cost at least $100 million every year over and above the cost of aggregate produced locally to move material by rail from Bruce, Grey and Huron counties. Transporting material from other areas by truck and rail would be even costlier in terms of capital, operating and energy needs without any overall reduction in environmental impact.

The study suggested that the Toronto-Hamilton area should continue to use close-to-market sources, and recommended several methods to improve delivery of the aggregates. Among the recommendations: new access roads between extraction sites and major roads; designation of special routes for aggregate haulage; surfacing of haulage roads; and construction of truck climbing lanes.

Gamma Rays Scan for Gold at the Kerr Addison Mine

The Kerr Addison Mine, one of the great gold-producing mines in the Larder Lake area, was used last year in a study which may develop a useful prospecting tool for gold-seekers.

Because gold can be difficult to locate through normal sampling methods, a gamma-ray spectrometer was used to sample underground mineralization at the mine.

Kerr Addison is a mine in which gold occurs with carbonate rocks containing potassium. When scanning the rock with the spectrometer to locate the potassium, the researchers were able to detect a definite link between the gold-bearing areas and the potassium content.

In the future, a drilled bore hole in a similar geological structure could be checked by lowering a device to take a potassium reading.

The level of potassium recorded would give the prospector an indication of possible gold potential.

Gravity Study Measures Huge Northern Basin

Imagine trying to find a pearl in the bottom of your swimming pool by feeling along the top of the water. That's similar to the task of the three-year gravity study just completed in the Sudbury-to-Cobalt area of northern Ontario by the Ministry geophysicists.

The area is an ancient rock basin filled with younger sedimentary rocks in varying depths. It's a mineral-rich area with gold and silver and other ores—but traditional search methods are expensive. A gravity study is one way to form a picture of the topography of the ancient base rock and the varying thicknesses of the sediment.

For the past three years, geophysicists have been measuring the density and gravity of the surface rocks of the area. The data collected will now be fed into computers to come up with tables that give a profile of the lower structure.

This data base, which should be available during the next year and a half, should

Technician in geoscience laboratory uses the Inductively Coupled Plasma-Optical Emission Spectrometer to test for up to 36 elements in sample.



encourage exploration companies to examine the area for likely ore deposits.

New Spectrometer Fast Analyser

Installed last year at MNR's geoscience laboratories, the Inductively Coupled Plasma-Optical Emission Spectrometer is one of the most up-to-date analytical instruments available. When analysing the samples from a wide range of environments—rocks, minerals, ores and concentrates, stream and lake waters—the spectrometer can produce a simultaneous readout for the concentrations of up to 36 elements in less than ten minutes, a vast improvement over previous methods.

The spectrometer has an argon plasma (flame) which provides a stable, high-temperature source that ensures efficient sample decomposition and excitation. Light from the "excited" atoms in the sample passes through an optical reading system. The intensity of the light gives a measurement of the elemental abundance in the sample. Data of standards stored in the spectrometer's electronic system is compared with each of the 36 elements to provide accurate analyses.

Elements that can be determined range from the most abundant elements—iron and aluminum, for example—to elements that occur in trace amounts such as chromium and europium. Thus the labs have an accurate, sensitive, precise and rapid method of testing for a wide range of elements.

Volcanic Rocks Show Their Age

Rocks, unlike many people, can be persuaded to reveal their age.

When you are dealing with the most ancient rocks of the Precambrian Shield which are 2.6 to 3.1 billion years old, you are looking at the results of volcanic activity that, in some areas, produced the richest ore deposits in the province.

If you had a method of dating these rocks to within plus or minus 2 to 5 million years of their birth, it's a reasonable basis for correlating data in a prospecting search for good ore deposits in rocks of a specific age.

A geochronology program has been collecting samples of Precambrian rocks. Last year this was done in the Trout Lake area, Kenora District. In this case, a geochronologist worked with the area geologist to locate likely sources for the study.

The geochronologist collected 45 kg (100 lb.) samples of surface rocks and took them back to the geochronology lab located in the Royal Ontario Museum. Here, scientists crush the rock and then further process it, extracting the zircon content.

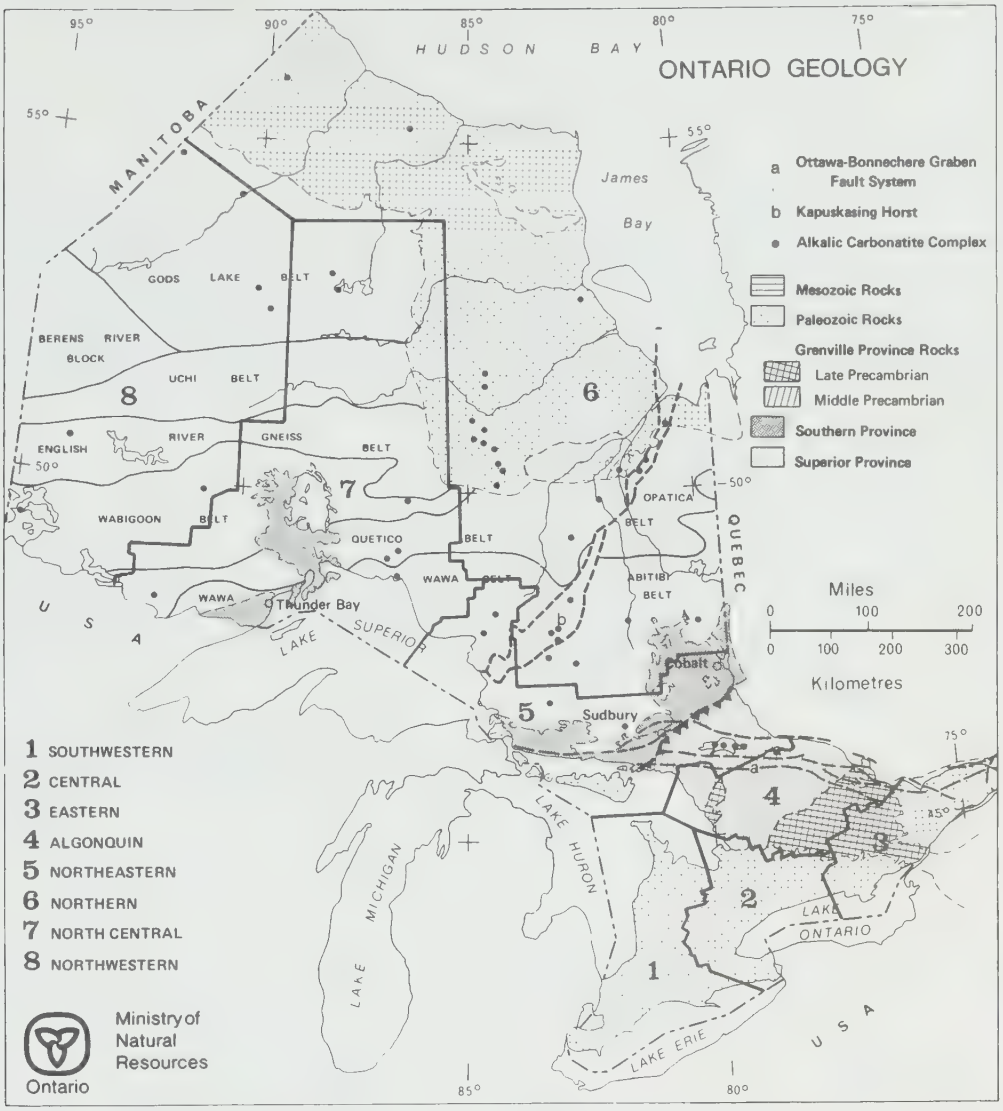
Next, the zircons were selected, altered portions abraded off and the cores dissolved and looked at with a uranium-lead mass spectrometer, a device that is used to deduce the age of the rock. Scientists have developed high accuracy with the dating process. Their reports should yield valuable exploration assistance.

Geoscience Research Grants

Since 1978, the Geoscience Research Grant Program of the Ontario Geological Survey has been awarding funds to universities for research projects that will be of interest and aid to mineral prospectors and developers. In 1980, grants totalling $499,600 were awarded to ten universities for 29 research projects.

The program supports projects of up to three years' duration and papers are presented, along with other OGS papers, at the annual Geoscience Seminar held in Toronto.

Highlight of last year's seminar (attended by 500 geoscientists from industry, universities and government) was a project that could resolve the problem of radium pollution in water wastes at mines. Project researchers at the University of Western Ontario, headed by Dr. William S. Fyfe, have come up with a new treatment for radioactive wastes. In the laboratory, it has effectively reduced radioactive contamination of water.



1980-81 Mineral Program Highlights

- Total estimated value of mineral production, to be assessed under The Mining Tax Act, exceeded $4.5 billion and realized a record high revenue of $160.5 million in taxes.
- Under the new Ontario Mineral Exploration Program (OMEP), 94 applications were received for a total planned expenditure of $33.9 million for exploration purposes in the province.
- A total of 140 scientific reports and 290 geoscience maps were produced by the Ontario Geological Survey.
- The Ontario Geological Survey sent out 25 regular field survey crews and 26 crews on behalf of other agencies.
- Twenty-nine grants totalling $499,600 were made to 10 universities under the Ontario Geoscience Research Grant program.
- An independent long-range study on transportation of aggregates from remote areas to urban centres was published during the year.
- Comprehensive commodity studies on gold and uranium were completed.
- Six special joint survey programs funded by MNR in partnership with various other government agencies (such as the Ontario Ministry of Northern Affairs, Ontario Ministry of Treasury and Economics and the Canada Department of Regional Economic Expansion) received $3.1 million last year.



Draft SLUP Plans Released for Public Comment

Lands and Waters Management

During 1980-81, the Ministry released draft versions of three Strategic Land Use Plans (SLUP) to the public for comment. For this program, the province is divided into three regions—northwestern, northeastern and southern Ontario—and plans were prepared for each.

MNR staff employed a wide variety of approaches throughout the province to inform the public about the SLUP drafts and to seek responses. During the coming year, the public reaction and comments will be assessed. From this and other studies will develop the final versions of the three comprehensive Strategic Land Use Plans.

The three regional SLUP plans will provide policy direction for the more detailed land use plans being prepared for each of the Ministry's 47 districts. District plans follow the same planning process, but give more specific detail.

Preparation continued during the year on the West Patricia Land Use Plan, a project begun in 1976 because of the proposed licensing of new Crown timber limits north of Dryden to Reed Paper Limited.

This plan for a special area of northwestern Ontario will be a composite of the Red Lake, Sioux Lookout and Geraldton distict land use plans. A complete package on background information and policy approach of the West Patricia plan is scheduled to be released during 1981.

What is Land Use Planning?

Land use planning is the process by which decisions are made as to how the various components of the province's lands and waters can be used most efficiently.

Crown lands make up 87 per cent of Ontario's area and, as the province's official manager of this vast wealth, the Ministry must plan carefully so that the various resources will be used for the greatest benefit of the people of Ontario.

There are many uses to which land can be put: recreation (hunting, fishing, canoeing, etc.), mining, forestry, housing, industrial facilities and agriculture, to name a few.

A land use plan is a comprehensive document that is developed by an MNR planning team. The team consists of specialists from various disciplines, such as biology, forestry, geology, agriculture, environmental studies and recreation planning.

The interested public plays a most important part in the development of land use plans. The Ministry has developed a step-by-step planning process in which public participation is among the required steps. The public is provided access and input to the process at the data-gathering, policy and draft plan stages.

When the initial studies have been done, policy determined, and the questions of existing uses and potential capability of the lands and waters have been fully discussed, a draft land use plan is prepared and released to the public. Public comments on the plan then enable the Ministry to make revisions if they are required, and to work toward a final plan.

In southern Ontario, where most of the land is privately owned, the strategic land use plan is called the "Co-ordinated Program Strategy for the Ministry of Natural Resources in Southern Ontario."

This is because land use planning in this area must be done under a different set of conditions. Ministry targets for resource use must be achieved primarily on private land in organized municipalities.

Consequently, instead of directly managing the land resource, as is done on Crown land in northern Ontario, the Ministry must emphasize extension programs, technical assistance and other forms of encouragement to private landowners. Also, MNR's land use plans must be co-ordinated with local municipal planning. The plans will be used by MNR staff to guide them in the management of lands, waters and other resources.

Water control and land use planning are important aspects in MNR's management of the 87 per cent of the province which is Crown land.

Basic Mapping Will Reduce Inaccuracies

The Ontario Basic Mapping Program completed its start up phase of three years during 1980-81. The overall program—scheduled to be completed over 13 years—is being carried out by private mapping companies under contract to the Ministry, and has been designed to overcome a serious problem that currently exists with Ontario maps.

Those who use maps more sophisticated than standard road maps—transportation planners, land use planners, resource managers, mineral explorers, land developers, vacationers, hikers, etc.—recognize that Ontario needs a basic mapping system which provides maps that are compatible with each other.

Maps may be at different scales, but there is a clear need for any point on one map to have the same map reference it has on another map. No such common referencing system previously existed in Ontario.

In fact, there are maps now in use, produced by different agencies, which show differences of as much as a quarter of a mile in position and up to 100 feet in altitude.

The Ontario Basic Mapping Program, when completed, will eliminate the need to use maps which have such differences.

The problem stems from the fact that, because maps are produced on flat paper and because the earth is curved, map positions can never be precise.

Map-makers have been trying for centuries to solve this problem. With current technology, the maps currently being produced by the Ministry come as close as possible to providing a solution.

The Ministry's new maps use a reference system that has wide acceptance: the Universal Transverse Mercator (UTM) grid system.

The referencing grid provided by the UTM system is used by the federal government, NATO, several other provinces, and over 50 other countries. The system divides the entire globe into zones, each of which is uniquely numbered. This means that any point within a zone can be identified by its own co-ordinates and, since no two points can have the same co-ordinates, any point can be compared and related to another easily and exactly.

The Ontario Basic Mapping Program is producing maps at three different scales: 1:20,000 and 1:10,000 in northern and southern Ontario respectively and at 1:2,000 in urban areas. But regardless of the scale, all the maps are compatible, since they are based on the same referencing system. They are also compatible with existing federal government topographical maps. However, the Ontario maps are much more detailed.

As an example, an area that appears as a small square on a map that is not very detailed (on the 1:250,000 scale) can itself be the area shown on an entire map at a more detailed scale (1:2,000).

COSINE System Testing Nears Completion

In 1980-81, the Ministry neared the completion of tests on its COSINE (Co-ordinated Survey Information Exchange) System. It is anticipated that the system will be ready in the coming year.

COSINE will eventually revolutionize the entire field of control survey information (information about latitudes, longitudes, elevations, etc.) in Ontario.

Control survey information is needed to relate different points on the surface of the earth to each other with precision. Control surveys make it possible, for example, for engineers to start constructing a bridge or a subway from two different ends and guarantee that the structures will meet in the middle.

And, using control survey information, engineers can determine exactly how much higher or lower one point is than another.

At present there is a great deal of control survey information about Ontario, but it is scattered throughout the province in various government ministries, in private land surveyors' notes, in municipal offices, and elsewhere. The COSINE system is designed to promote greater efficiency by integrating all control survey information for the province.

All the available data will eventually be stored in a central computerized data bank, and will be accessible to the public, the engineering and surveying communities, and to other interested parties. This means that people who need the information will have all of it at their fingertips, and won't have to conduct extensive and time-consuming searches for information.

Another advantage of the COSINE system is that it will enable the compilation and calculation of the data for an international project to redefine the parameters of the shape of the earth. This project, which involves the governments of Canada, the U.S., Mexico and Denmark, was begun in the early 1970s and will be completed in 1984. After 1984, MNR staff will use the COSINE system to recalculate Ontario data—a project that may take several years.

New Version of Land Use Planning Guidelines

A revised edition of the Guidelines for Land Use Planning was issued during 1980. The original Guidelines had been in effect since 1974.



An OCRS scientist studies the film from a recent aerial photography mission, using a stereoscope for three-dimensional viewing.

Satellite Technology Assists Land Use Planning

How much land is there in Ontario? How much of it includes water, wetlands, forests, cleared land? Exact answers to these questions are not easy to come by because no one knows in detail all parts of Ontario's vast terrain.

A Ministry program using remote sensing technology was initiated during 1980-81 to get accurate answers to the questions posed above.

The project combines the skills of the Ministry's land planners with specialists of the Ministry's Ontario Centre for Remote Sensing (OCRS).

The OCRS is taking an inventory of land use and land cover types through the computer analysis of data on the earth's surface transmitted by orbiting LANDSAT satellites. Although the satellite orbits at an altitude of some 570 miles, it can discriminate areas as tiny as one acre (tiny, that is, from so great an altitude) with accuracy.

Thanks to a new map production technique developed last year by the Centre, once the satellite data is analysed, color maps can be produced within a few hours, using a computerized printer.

Wetlands are a good example of a present land resource which the Ministry would like to know more about. Wetlands—usually considered simply as bogs and swamps by the layman—actually teem with life and potential resources.

Wetlands provide essential habitat for many species of our native wildlife, such as caribou and many kinds of waterfowl.

It has been suggested that Ontario's wetlands contain Canada's highest reserves of peat. Our province's peat resources may one day be extracted from wetlands not just for use in gardens as peat moss, but also as fuel for generating heat and electricity.

Through the new technique of computerized map production from the analysis of satellite data, the OCRS has begun to map the various types of wetland which exist in Ontario's far north. During the

OCRS scientists from three fields (forestry, geomorphology and land use planning) instruct a computer in the analysis of satellite data.

Providing Access to Ontario's Resources



summers of 1978 and 1979, field samples were taken in selected areas to supplement the satellite data. In 1980-81, the first wetland maps were produced.

Technology Transfer Program Started

During 1980-81, a program of technology transfer was initiated by the Ontario Centre for Remote Sensing.

The Centre's technology transfer program is aimed at three specific audiences: government and its agencies, private industry and universities. The approach used last year involved seminars, workshops, publications and making OCRS staff available for consultation and information.

Full details of the program are given in a booklet entitled, *The Comprehensive Program of Remote Sensing Technology Transfer at the OCRS: A Unique Approach.*

Airborne Thermal Scanning Helps Save Energy

As a contribution to a major Ontario Ministry of Energy program on energy conservation, the OCRS gathered information during 1980-81 on heat loss from buildings in ten Ontario cities by using a thermal infra-red scanner.

Aerial thermography (the detection of heat energy by using a scanner carried on an aircraft) can also be used to monitor heat generated by leaks from sanitary landfill sites; as a means of checking for sources of water pollution; and to pinpoint areas which are prone to frost formation, as an aid to reforestation.

OCRS staff also contributed to the operation of community residential heat-loss clinics operated by the Ministry of Energy.

In 1980-81, the Ministry managed four joint programs designed to provide better access to resource-rich areas of Ontario. Forest and mineral resources often exist in remote and undeveloped areas.

It takes resourcefulness, careful planning, good management, co-operation and a lot of money to enable resources users to get into hitherto remote areas.

The four joint programs enabled the Ministry to help in the building and the maintenance of roads and bridges to and from productive resource locations. The access programs were:

- The Resource Access Program (funded jointly by this Ministry and the Ministry of Northern Affairs);
- The Northern Ontario Resources Transportation Program (funded by MNA);
- The Forest Management Subsidiary Agreement Program (financed jointly by the federal and provincial governments and private industry); and
- The Ministry of Natural Resources' Forest Management Agreement Program (consisting of contractual agreements between MNR and certain forest product companies).

During the last fiscal year these programs funded the construction in the province of 685 km (428 mi.) of roads and six bridges, as well as the maintenance of well over 9,000 km (5,625 mi.) of roads (which is more than the distance between St. John's and Victoria, *and* back to Calgary!).

Resource Exploration Licences Being Negotiated for Hudson Bay Lowland Tract

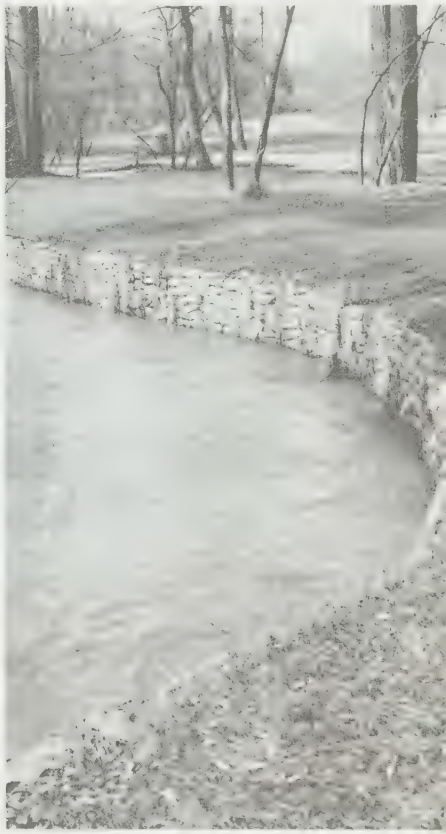
Negotiations were completed last year with four companies and mineral exploratory licences of occupation were issued for a vast tract of northern Ontario. The area to be explored covers some 566,561 hectares (1.4 million acres) in the Hudson Bay lowlands, and the companies will be searching primarily for lignite, which is a low-grade form of coal.

The companies also suspect that peat and many other minerals, including diamonds, may be found in the huge territory.

Conservation Authorities Emphasize Water Management

MNR works with Conservation Authorities in various ways to control waters in all areas of the province. Structures, such as this flood plain drop control (left) and bank stabilization project (right) are often necessary to keep waters from flooding urban areas or eroding the banks of swift streams.





During 1980-81, the Ministry worked closely with the 39 Conservation Authorities in the province to make substantial progress on water and related land management projects.

Last year's program had a strong water management thrust, with almost $26 million of the more than $35 million in grants to Conservation Authorities going toward such projects.

The funded projects included floodplain mapping, dam construction, channel improvements, erosion protection, water quality monitoring and environmental assessment.

The Conservation Authorities are responsible for most watersheds in southern Ontario, and for watersheds in parts of northern Ontario near North Bay, Timmins, Sault Ste. Marie, Sudbury and Thunder Bay.

The Ministry is responsible for the development of policies and planning systems for the Authorities. In addition, the Ministry has a number of direct water management responsibilities throughout the province.

The Ministry provides financial, technical and operational assistance to the Authorities.

A Conservation Authority represents a provincial-municipal partnership. The membership of each Authority includes representatives from all municipalities situated wholly or partially within the watershed, plus up to three members appointed by the province.

Boundaries of most Authorities are defined on a single watershed basis such as the Grand River system, although some are on a number of small and adjacent watersheds, such as the Cataraqui Region.

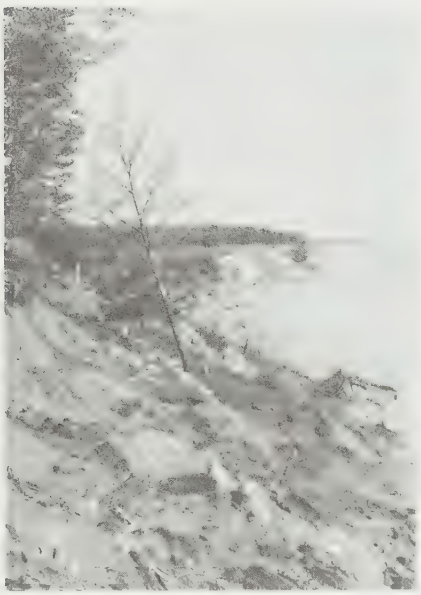
Each Authority undertakes a wide variety of programs to encourage the conservation, restoration, development and management of the renewable natural resources of their watersheds.

Flood prevention and control, and related water management, is the top priority. But managing forestlands, preserving wildlife habitat and conservation education are also important programs.

Probably the most visible program to the public is the provision of recreational opportunities—camping, boating, swimming, etc.—in Conservation Areas. Usually the waters and lands so employed have been acquired and developed as components of the Authorities' flood control and water management activities. The recreational use of these areas occurs as a beneficial by-product of these water management projects.

A good example of the co-ordinated operations of the Ministry and a Conservation Authority was seen in the Town of Port Hope last year. The town suffered serious losses when the Ganaraska River flooded in early 1980. The floods affected

Working for a Naturally Productive Environment



Erosion along Great Lakes' shorelines is a major problem. Special MNR programs keep shoreline residents informed of erosion hazards and help them to cope with erosion problems.

a significant portion of the town's central business district, wiping out or heavily damaging homes, commercial enterprises and various historic buildings.

To guard against a repetition of this disaster, the Ganaraska Region Conservation Authority used Ministry grants to purchase several properties along the river. The Authority intends to construct a major flood control channel through the town, and to manage the balance of the flood plain in this area so that such a disaster will not be repeated.

New Authority Formed for Kawartha Region

During 1980, the inaugural meeting was held of the the recently formed Kawartha Region Conservation Authority. MNR staff are presently working with the Authority to develop a watershed plan and a long-term program for the area.



New eel ladder at Moses-Saunders dam near Cornwall allows Atlantic eels to travel up 100-foot face of dam enroute to spawning grounds in Lake Ontario.

The Ministry designed and constructed a new eel ladder for the Moses-Saunders dam near Cornwall last year. The new ladder will not only make life easier for thousands of Atlantic eels, but will also help to support the efforts of hundreds of Atlantic fishermen who fish for eels in the Gulf of St. Lawrence.

The Moses-Saunders dam was constructed in the 1960s as part of the St. Lawrence Seaway. The dam would have prevented thousands of eels from making their yearly migration from the Atlantic Ocean to spawn in Lake Ontario, so a temporary wooden ladder was built in 1974. Time and traffic eventually took their toll on the ladder, however, and it became evident that a new one was needed.

The newly designed ladder is a series of ramps which zigzag up the face of the dam. As water trickles over the ladder, the eels negotiate the ramps, actually climbing the 100-foot face of the dam in about 15 minutes. After taking this man-made detour, the eels continue to their Lake Ontario destination.

The unique ladder is one of the largest in the world, and will be something of an attraction for naturalists and resources managers alike.

Other design and construction projects completed during 1980-81 included: construction of the Julian Reed Fish-ladder at Norval and the Reid Milling Dam Fishladder and Lamprey Barrier in Streetsville; the reconstruction of the Prairie Bee Dam, dams on Fara Creek, and on North Creek at the Dryden Tree Nursery; construction of a bridge over the Wenebegon River; and erection of a header house and two greenhouses at the Orono Tree Nursery.

Keeping the Public Informed

Ministry cartographer produces topographical map. Ontario Basic Mapping Program, begun in 1980-81, will be completed in 13 years.

Part of the Ministry's water management activities during 1980-81 included an active public awareness program about the potential hazards associated with the Great Lakes shoreline.

The great beauty of the shoreline can often be damaged by flooding, erosion, high waves and strong currents. These problems can be costly to property owners.

The Ministry's water management staff have put considerable effort into informing the public about these hazards and how to cope with them.

The information program involved sending letters to the 35,000 shoreline residents, outlining information available from Ministry staff and elsewhere.

In addition, slide-tape shows on shoreline hazards were prepared and shown at various public meetings throughout shoreline areas. These shows were also made available to other government agencies for general distribution and use.



1980-81 Lands and Waters Program Highlights

- Through MNR's resource access programs, 685 kilometres (428 miles) of roads and six bridges were constructed, and more than 9,000 kilometres (5,625 miles) of roads were maintained.
- Over 36,000 mining claims were recorded, more than double the number of claims registered in the previous year.
- The Ontario Basic Mapping program produced almost 300 medium-scale maps of northern and southern Ontario and more than 400 large-scale maps of 46 Ontario communities.
- The Ministry released draft land use plans to the public covering the province's three strategic planning areas: northeastern, northwestern and southern Ontario.
- The Ontario Centre for Remote Sensing produced a total of 19 scientific papers and reports.
- In co-operation with municipalities, the federal government and other ministries, MNR helped the 39 Ontario Conservation Authorities to complete major flood and erosion control projects throughout the province, including Thunder Bay, Belleville and Chesterville.
- The first maps showing forest and vegetation types north of latitude 52° north were produced.



Parks Enjoyed by Millions of People—in Every Season

Parks and Recreational Areas



MNR encourages year-round use of parks. Miles of cross-country ski trails are maintained for outdoors enthusiasts in the winter.

During 1980-81, Ontario's system of 131 provincial parks attracted 5.5 million summer and winter visitors from Ontario and neighboring provinces and states. This was an increase of almost 50,000 from the previous year. Spending anywhere from a day to a number of weeks, campers, fishermen, canoeists, skiers and nature seekers enjoyed the resources of the woods, waters and terrain of our various parks.

However, last year the record number and size of forest fires in the north brought about a decrease in the number of out-of-province and U.S. campers. This factor, plus a 50¢ increase in camping fees and the jump in transportation costs, accounted for a decrease of 64,000 in the number of nights of camping in the parks.

Day use visits increased, however, by 110,000. An increase was also recorded in free group camping and day-use visitors from bus entries and annual permits.

The establishment of three new parks added 616 hectares (1,522 acres) of parkland to the 4,263,495 hectares (10,534,366 acres) already in the system. Two of the new parks are nature reserves—Schreiber Channel is in the North Central Region and Limestone Islands are in the Algonquin Region near Parry Sound. Peche Island in the Southwestern Region is classed as a recreation park.

Behind the scenes, hundreds of staff members set up and maintained the facilities and services necessary to make the visits enjoyable. Ministry programs of improvement constantly assure the upgrading and maintenance of the parklands.

Even with the large annual volume of visitors, however, our parks are by no means overpopulated. Revenues generated (more than $132 million last year) are important to the province's economy.

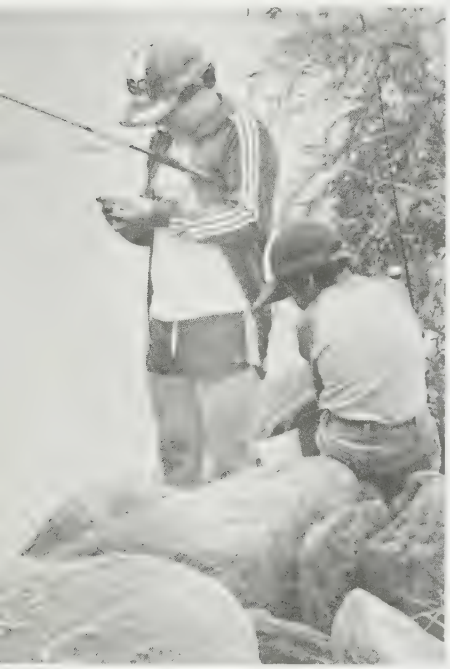
Thus, an active advertising promotion campaign for the parks system was planned for the 1981 season. A six per cent increase in attendance is the goal for 1981.

In 1980, the outright ban of alcohol from 20 parks from May 7 to June 1, and increased surveillance helped assure family campers of peace and quiet. The successful alcohol ban policy, first imposed in 1978, will be continued as long as the need exists.

Additional attention was paid last year to improving the snowmobile and cross-country ski trails operated by the Ministry. Trail clubs and conservation authorities were also given $500,000 in financial

MNR's 131 provincial parks throughout the province offer full range of outdoor enjoyment to young and old alike.

Fishermen, canoeists, campers and boaters spend from a day to weeks in the parks system. Last year, camping fees were reduced in 44 parks through introduction of honor system for collecting fees.





assistance by the Ministry to groom 15,861 kilometres (9,856 miles) of snowmobile trails and 1,920 kilometres (1,193 miles) of cross-country ski trails. Transprovincial snowmobile trails are being developed for future public use.

Fee Break for Late-season Campers

Campers taking in the splendid scenery last fall were offered reduced rates at 44 provincial parks during late September and on into October.

As an efficiency measure, the campers were asked to self-register and deposit permits and fees in special collection boxes. Therefore, no gate staff was necessary.

Reduced rates were $3 for a regular campsite and $4 for sites with electricity. Thirteen other parks were still in full service during this period charging normal fees of $5.50, $6 and $7.50.

Reduced rates were also offered in some parks on weekdays during the full camping season.

The Ministry also encourages day use of the parks even after the campsite operating season is over, stressing that the parks can be enjoyed on foot all year round.

Helping to Improve Municipal Parks

Last year, under The Parks Assistance Act, 34 municipalities throughout the province received grants totalling $556,000 to maintain and improve their facilities or to purchase lands for park areas.

Most of these grants were in the $10,000 to $25,000 range, but some were as much as $50,000.

Putting the Sun Behind the Showers

Modern technology harnessed an old, old source of heat as four northern and six southern Ontario parks installed hot water systems fuelled by solar heat last year, for use in 1981.

At Rushing River and Kakabeka Falls provincial parks, the sun-heated water will provide visitors with hot showers. At Remi Lake and Chutes provincial parks, it will heat the water for the taps in the washrooms. Solar panels were also installed in parks at Carillon, Balsam Lake, Darlington, McRae Point, Long Point and the Mew Lake Campground in Algonquin Park.

Each solar power installation will supply 55 to 65 per cent of the entire hot water requirements of the parks. The program is part of a movement to encourage use of sun-power as an alternate energy source by both private and other sectors of the population.

The projects are a joint program of the Ministries of Natural Resources, Energy and Northern Affairs.

New Park for Paddlers

Canoeists, fishermen and kayakers will soon be able to enjoy the first waterway provincial park in southern Ontario. Last year, plans were under way to establish Madawaska Waterway Provincial Park along a 46 km (28.5 mi.) stretch of the Madawaska River between McPhee Bay. and the Village of Griffith, about 50 km (31 mi.) northeast of Bancroft.

This is a magnificent stretch of river that has been used as a training area by the Canadian Olympic team and is also a popular area for day and overnight canoe trippers.



The lower portion of the proposed park offers an exciting variety of water conditions: waterfalls, shoots and a series of rapids. Nature explorers will find orchid species in the most northern limits of their range and can view cross-sections of a diverse geologic landscape.

Park facilities will be minimal to keep the natural character of the environment. However, two small campgrounds are in planning stages.

1980-81 Parks Program Highlights

- Three new parks were added to the provincial system, bringing the total to 131.
- Lands included in the park system now total 4.2 million hectares (10.5 million acres). The three new parks added 616 hectares (1,522 acres).
- During the winter months, 1,933 kilometres (1,201 miles) of snowmobile trails and 400 kilometres (248 miles) of cross-country ski trails were maintained on Crown land.
- For canoe trippers, 107 canoe routes and 21 provincial canoe areas were managed.
- Under The Parks Assistance Act, 34 municipalities received grants totalling $556,000 for park maintenance and improvement.
- To assure park users of healthy and safe visits, 2,000 drinking water samples, 3,000 swimming beach samples, 35 park sanitation audits and six park sanitation seminars were undertaken.



Major Revision of Game Licensing Allows Herds to Increase

Wildlife

Combined Big-game Licenses Eliminated

In June, 1980, the Ministry introduced the first major revision of the hunting licence structure in 10 years. This step was designed to allow greater control of moose and deer harvests, while at the same time providing hunters with opportunities to continue hunting big game.

The most significant change in licensing was the elimination of bear from the combined licences formerly issued for deer or moose. Bear licences are now purchased separately. This move enables the Ministry to collect more accurate data, needed for the improvement of big game management in the province.

Special Tag Required for Deer

Deer herds had declined substantially during the last 15 years in parts of central and northern Ontario. Increasing numbers of hunters were unsuccessful.

Consequently, a selective harvest system was introduced in fall, 1980, as a major part of the new deer management program.

When the deer season opened, the taking of antlerless deer was restricted for the first time in nearly 30 years. As a result, in the fall, 1980 hunt, 6,000 fewer antlerless deer were taken than in 1979.

Antlerless deer could be taken only by Ontario residents, provided they applied to the Ministry for a validation tag for this purpose and attached it to their basic licence.

The selective harvest approach is looked on as the only way to control the annual taking of deer in a predictable manner, and to allow the herds to increase through the protection of fawns and breeding females.

Ministry projections indicate that with modern management techniques, within ten years there should be a 25 per cent increase in deer in Ontario.

During the spring of 1980, MNR staff took the first deer population inventory since 1974, to provide the Ministry with a reliable estimate against which to measure results of the new deer management program.

Other measures were also being taken to improve and standardize the procedure for the collection of data about the number of deer taken and the status of their habitat each year.

Hunting Opportunities Increase in Southern Ontario

In agricultural southern Ontario, where in contrast, the number of deer has increased, controlled hunting zones were extended from seven in 1979 to 21 in 1980 to allow greater hunting opportunities.

Shotgun and/or muzzle-loading firearms seasons, with controlled hunter numbers, were held in the 21 areas. Approximately 5,650 hunters were authorized to hunt and they took about 1,000 deer.

Deer Management Priorities

Other important parts of the deer management program were:

- Extensive management of winter range to ensure that herds are not deprived of foodstuff;
- Including habitat consideration as an important element in forest management, following principles developed through Strategic Land Use Planning (SLUP) for multiple use of land;
- Effective control measures to be exercised in areas where there was a heavy predator toll; and a high priority on law enforcement to reduce the illegal killing of deer.

The support of this program shown by an overwhelming number of experienced hunters was most encouraging.

Last year, taking of antlerless deer was restricted for first time in 30 years. Through new deer management program, MNR should increase deer herds by 25 per cent within 10 years.

Moose Management Policy Approved by Cabinet

MNR's new moose management policy is designed to double the number of moose in the province to a total of 160,000 by the year 2000.



A moose management policy, which was developed in 1979-80 through extensive public participation at 72 meetings held throughout Ontario, and discussions with members of interest groups, was approved by Cabinet in October, 1980.

The Northwestern, North Central and Northern regions of Ontario in particular have seen declining moose populations for the same reason deer herds have declined—overhunting, poaching, animal predators and deterioration of the habitat.

The shortened seasons and the increased licence fees to non-residents, which were introduced in 1975, were not enough to halt the decline of moose. Herds had dwindled from 125,000 animals in 1968, to a present 80,000, representing a decrease of 35 per cent.

The new, comprehensive policy, designed to increase the moose population, covers broad objectives of moose management including: controlling the harvest of moose by limiting licences through a lottery draw; controlling hunter access; predator control; enforcement; habitat management; resource allocation; research; mandatory registration and reporting; and hunter education.

The MNR objective is to double the present herd—to 160,000 in the next 20 years.

The Ministry plans to have the entire policy and program in place in three to four years.

Moose Harvest Reduced by 28 Per Cent Last Fall

As intended, the number of moose taken in the fall 1980 hunt was reduced from the 1979 number by 28 per cent—8,361 moose compared to 11,690 the previous year.

Two or three hunters were required to share a moose in the fall, 1980, hunting season in a measure to reduce the harvest. A drastic shortening of seasons, combined with generally poor hunting conditions across the province, also helped to account for the reduction.

Bill 59— Major Wildlife Resource Revision to the Game and Fish Act

Precise management of our wildlife resource is provided for in Bill 59, an Act to amend The Game and Fish Act, which received Royal Assent on November 14, 1980.

Amendment of the Act reflects the increasing interest by all Ontario residents in protecting wildlife resources. In particular, the many concerns of naturalists, humane associations and animal welfare groups will be more adequately served by the additions to the statute.

A few of the major changes provided for were:

- Separate classification for elk in order to give that animal specific protection;
- Additional controls necessary for the preservation and use of deer and moose, and mandatory reporting of hunter success;
- Protection of reptiles and amphibians to ensure that scientific and commercial use does not lead to them becoming threatened or endangered species in Ontario;
- Bringing the maximum fines for infractions under The Game and Fish Act from $1,000 to $5,000;
- Provisions to control the use and possession of traps;
- Provisions concerning the training of hunting dogs and field trials held outside the normal hunting season.

Black Bear Study In Wrap-up Phase

Consider the mother black bear—where would her cubs be without her? She alone raises the cubs from infancy to subadult with no help from the male and, in fact, may have to defend her young from a threatening male.

These, and many previously unknown facts about black bear have been gleaned from a long-term study of bears in an area northeast of North Bay. The project is to be completed by the end of 1981. When the MNR study was begun in

Tranquillized bear wears a radio-tracking collar which allows MNR wildlife scientists to learn details of bear's habits that will assist in management of this big-game animal.



1969, little detail was recorded about the black bear or, indeed, about any bears anywhere. Use of radio devices to track 125 bears throughout the area proved invaluable and contributed considerably to the progress of the study.

Researchers learned that black bears reproduce much more slowly than previously thought. The earliest age of giving birth for the females under surveillance was 5½ years. Since the mother tends the cubs for at least a year and a half, she doesn't mate again until the second year. She usually has two or three cubs. Females are about half the size of males—grown males weigh in at about 300 pounds.

Tracking the bears through the bush both physically and by radio, scientists discovered that they spend most of their waking time foraging for food. Black bears are not carnivorous but they seek out any high energy food—hence their attraction to human-made garbage.

In the spring they eat poplar leaves, catkins, grasses and sedges. They switch to berries in summer and make meals of ants, wasps and bees as well. Angry wasps deter them not. They break open nests and feed at leisure.

Male black bears are great wanderers, they've been tracked over large distances. At night, they simply sleep where they are. Females with cubs have dens, though they choose a sanctuary tree in the area to stow cubs for protection.

In the fall, the bears go on long-range foraging expeditions to load up on favorite foods prior to hibernation. When supplies are plentiful, they binge on acorns and hazelnuts. Winter dens are chosen carefully, usually a bear-size excavation is made at the base of a tree or stump and lined with leaves and grass.

Data produced and techniques of capture and control have already contributed to MNR's bear management program. Last year, material presented to regional workshops in the province was based on study information.

Rabies Research Program Developing Rabies Vaccine

The Ministry rabies research program made encouraging progress during 1980-81. The program is working toward the development of an oral rabies vaccine that can immunize Ontario's wildlife against the disease.

The major thrust of the program last year was to continue vaccine development by university and private contractors. But the Ministry's scientists also did research into the most effective way of administering the vaccine—once it is developed—to wildlife populations.

The research has led to the conclusion that the best way of vaccinating Ontario's wildlife is by using hamburger meat balls as bait.

In two trial runs during 1980, some 60,000 tetracycline-treated baits were dropped by air over test areas near Wingham and Owen Sound. The tetracycline in the meat balls left traces on the animals' teeth. When the teeth were examined under an ultraviolet microscope, the traces of tetracycline were visible as golden-yellow lines, and the presence of these marks told the researchers that the animal took the Ministry's bait. The meat balls were dropped from low-flying aircraft in quantities of about 100 meat balls per square mile.

The researchers also worked on ways to improve the percentage of animals that respond. Foxes and skunks are the largest carriers of rabies in Ontario, and the tests so far have shown that about 74 per cent of the foxes and 56 per cent of the skunks responded to the bait.

Meanwhile, work on the development of a suitable rabies vaccine was progressing, and researchers anticipate that a field test using a rabies vaccine will be possible in the fall of 1982.

New Program for Trapping on Private Lands

Trapper sets the new humane foot-snare trap developed by MNR. The snare lock and cable hold animal's leg firmly without inflicting pain and injury.



Sixteen Peregrine Falcons Released in Algonquin

A program for re-establishment of the peregrine falcon in Algonquin Park received an unexpected boost in the summer of 1980. Sixteen birds instead of the expected eight were supplied by the Canadian Wildlife Service from its captive breeding stock in Wainwright, Alberta.

The peregrine falcon, a small bird of prey, was placed on Ontario's endangered species list in 1977 when it was found that the species disappeared from Algonquin Park nesting sites. Re-establishment of this falcon became a priority goal of the Ministry in 1977.

During the first four years of the five-year program, 36 peregrine falcons were released in the park. Ministry biologists hope that the birds which survive will establish breeding populations.

Wild Orchid an Endangered Species

The small whorled pogonia, a type of wild orchid, was placed under the protection of The Endangered Species Act in April, 1980. This orchid is known to occur in Canada at only one location in Southwestern Ontario.

Two plants were present in 1980, down from five observed in 1978 and 1979, and four in 1977, when the species was first discovered in Ontario.

The small whorled pogonia is seriously depleted throughout its entire eastern North American range.

This brings to 14 the total number of species protected under Ontario's Endangered Species Act. Including the small whorled pogonia, they are: small white lady's-slipper orchid, blue racer, piping plover, white pelican, Kirtland's warbler, Eskimo curlew, golden eagle, peregrine falcon, bald eagle, West Virginia white butterfly, Lake Erie watersnake, timber rattlesnake and eastern cougar.

A program for administering trapping on private lands was approved in January, 1981. It is expected that the program will be fully implemented by the 1984-85 trapping season.

The 87 per cent of Ontario which is Crown land is now divided into registered traplines. The remaining land, which is privately owned, will now be divided into private land fur management areas. The Ministry worked for over a year with members of the Ontario Trappers Association to find the best approach to provide and control orderly trapping with the land-owners' consent. Each fur management area will be allocated a specified number of trappers depending on the fur resources within the unit. The system will enable the Ministry to collect more accurate management data and will alleviate problems of over-harvesting, excessive numbers of trappers and competition between trappers. It will also help the Ministry realize a greater economic return for the commercial resource on private land.



New Foot Snare Trap in Production

The humane foot-snare trap, developed by Ministry wildlife staff in 1979, is being patented throughout the world and was in production in Ontario during 1980. It is expected to be on the market during 1981.

The production trap was developed through 18 prototypes by Milan Novak of The Ministry's Wildlife Branch. The trap has an action similar to that of a lasso. Gently conforming to the shape of the animal's leg, the snare lock and cable hold the leg firmly without inflicting pain and injury.

Instructor lectures class of new trappers as part of MNR's mandatory trapper program.

Models shown at trapper education courses received very favorable response. The number of trap-related injuries to species like fox and coyote will be greatly reduced by the use of the foot-snare trap.

Course for Trappers Introduced

In July, 1980, the Ministry introduced a mandatory trapper education program in three southern regions, through the Ontario community college system. In July, 1981, the Fur Harvest, Fur Management and Conservation course became mandatory throughout the province.

The course, in the development stage since 1972, is designed to upgrade the skills of fur trappers and improve their methods of pelt handling and marketing.

The program deals with the biology and management of furbearers and pelt preparation as well as the survival skills the trapper has to have. Humane trapping is stressed throughout.

Over 30 trapper education courses were attended by 750 new and experienced trappers in this fiscal year, and 25 more instructors were trained in September to help fill the demand.

The number of trappers in Ontario has grown to almost 18,000 from 8,463 in 1970, and over 87 per cent of Ontario is divided into registered traplines. The rest is now being divided into the private lands fur management areas.

The value of all pelts taken during the last year for which figures are available—the 1979-80 harvest—was $24,407,054. The meat from these furbearers was worth an additional $8 million.



1980-81 Wildlife Program Highlights

- Resident and non-resident hunters of big and small game accounted for 4.8 million hunting days.*
- The passage of Bill 59 in November, 1980, provided the first major revision to the province's wildlife management laws in 10 years.
- A Ministry moose management plan designed to ensure the well-being and double the number of the province's 80,000 moose was approved.
- The inclusion of the small whorled pogonia, a type of wild orchid, brought to 14 the number of species protected under The Endangered Species Act.
- A new deer management program was implemented to increase the number of deer in the province by 25 per cent within ten years.

* A figure based on data gathered in 1979-80, and projected for 1980-81.



New Strategy for More and Better Fish

Fisheries

Nature was generous in bestowing over a quarter of a million lakes and countless miles of rivers and streams on Ontario, and it compounded the gift by adding 140 species of fish to the waters.

Last year, three million residents and 700,000 non-residents went angling for the bounty of these waters and added millions of dollars to our economy. Commercial fishermen also harvested $23.6 million worth during 1980.

But our fish populations have been under stress for years. Some areas are almost fished out, streams and lakes are debilitated and degraded and poisons and pollutants from many sources are affecting the fish in many water bodies.

Concern over the deteriorating status of our fish stocks brought about, in 1979, a new management strategy for the province's fisheries. The new program, the Strategic Plan for Ontario Fisheries (SPOF), was developed by a federal-provincial task force.

SPOF is committed to the maintenance and protection of healthy fishery resources in the province and to the rehabilitation of those waters which have become degraded.

Last year's Fisheries program emphasized these areas:

- Rehabilitation of degraded fish populations and habitats;
- Improvement of public awareness of fish resources and environment;
- Development of a computerized management information system, and
- Assessment of fish culture capabilities and recommendation of new sites for fish culture facilities.

To improve some streams last year, silt and other debris were dislodged by using fire hoses on existing spawning beds. In other places, boulders and gravel were added to streams to create the spawning areas. This was done for walleye spawning grounds, for example, in streams entering Lake of the Woods and Eagle Lake.

In some areas, surveys were undertaken to see if spawning grounds could be created for both walleye and lake trout. Walleye were also transplanted from one area to another to re-establish that species in waters from which it had all but disappeared.

Work was begun in 1980 on the construction of the Hill's Lake Hatchery. It will be one of the most modern major brood stock hatcheries in the world, when completed in the fall of 1981.

Brood stock at Hill's Lake will produce five million eggs annually. Improvements were started on other hatcheries in the northern portion of the province last year as well.

A major study was completed last year on the needs and development options of the Ontario Fisheries Information System (OFIS). This is a computer-based system to provide information for fisheries management. Implementation of this program is expected to begin in 1981-82 and will include computer equipment in fisheries units throughout the province for local data analysis and a central data archive which would be accessible to all units.

The Ministry intends to preserve and enhance the fisheries of northern Ontario and restore degraded fisheries in the southern part of the province. With last year's accomplishments, this multi-year program is well-launched.

Who, What, Where and How of Ontario's Anglers

To produce a profile of the impact of sport fishing on the province's economy and the fishing environment, a questionnaire was sent out early in 1981 to both residents and non-residents of Ontario. Names of 7,500 non-residents were selected from 1980 Ontario angling licence holders and 40,000 residents' names were chosen at random. Not all the Ontario residents are anglers, so the sampling will have a cross-section of unbiased results.

The survey was a joint MNR-federal Department of Fisheries and Oceans

MNR fisheries technician gets firm hold on a burbot (freshwater member of cod family). Experts study fish and their habitat to ensure the province's fish supply.

Conservation Officers not only patrol fishing areas to enforce regulations, but also offer friendly advice.



project and will update a previous survey taken in 1975.

Questionnaires asked for details on places fished, fish taken and fish preferences. Information on equipment rentals or purchases, accommodation and other expenditures was also sought.

Results of the survey will be used to produce statistics for several reports, including summaries for MNR fisheries staff in the field.

Lake Trout: The Fight to Preserve a Fragile Fish

Last year, 400,000 yearling lake trout were planted in Lake Ontario by MNR as part of a program begun in 1976 to reintroduce the species following complete extinction in this lake in the 1950s.

The first encouraging results of this program came to light in the fall of 1980, when mature female lake trout weighing about five pounds were taken from a potential spawning area near Clarkson. The females were in a spawning condition and fisheries biologists will continue to monitor the progress of the trout carefully over the next few years.

Native lake trout have entirely vanished from not just Lake Ontario, but from over 100 other lakes in the province over the past 30 years.

Man, by changing and polluting aquatic environments, has put the slow-growing lake trout at risk.

Lake trout need six to eight years to mature and females don't necessarily spawn every year. They also produce relatively few eggs, compared to most other species. The eggs need four to six months to hatch and the fish need a clean, high-oxygen, low-vegetation habitat.

Some of the methods in use to save the trout in certain areas and preserve the status quo in others are re-establishing lake trout habitats, controlling effluents and pollutants, and regulating fishing. Control of the lake trout predator, the sea lamprey, in Lake Ontario has also contributed to improving conditions for the fish in that lake.

Fisheries researchers are also looking for other ways to stabilize or increase native populations.

For example, last year Lake Simcoe lake trout were transplanted to a northern sanctuary lake to see if they could thrive in the new environment without genetic change. If the transplant process is successful and healthy, genetically stable stock are the result, it may become possible to save other populations in the same way.

Adding Life to Our Waters

Conservation Officer makes creel count to ensure licensed fisherman is taking only allowable catch.



To replenish fish populations throughout the province, Ontario's 14 fish culture stations produced the 81,000 eggs and 7.5 million fish used to stock our waters. Most of these were released into 1,100 inland waters; 36 per cent went into the Great Lakes and their tributaries.

The majority of the fish stocked (about 83 per cent) were salmonids: lake trout, rainbow trout, brook trout, splake (an MNR-developed hybrid of brook and lake trout), coho and chinook salmon. Non-salmonids released were maskinonge (muskellunge), walleye and smallmouth bass. Where there are native communities of non-salmonid fish, stocking programs have met with limited success, so releases of these fish were for specific rehabilitation programs and research efforts.

When stocking fish, managers take into consideration public demand and the natural supply and accessibility of fishing waters, among other things. Information from periodic questionnaires and locality angler and resident interviews establishes angling activity and whether the fish supply is adequate. Because fish are stocked for the benefit of all Ontarians, the bodies of water considered must be available to all members of the public.

How We Built a Better Trout

Splake registered its first success with anglers during the 1980 season. An improved hybrid, which was developed by Ministry scientists, was stocked in Georgian Bay in 1979 and provided good catches last year.

The so-called backcross splake was created by cross-breeding a female lake trout with a highly selected sixth generation splake. The result was a good angling fish that grows up to 15 pounds and marries the deep swimming ability of the lake trout with the fast maturing quality of the brook trout.

Splake were bred with qualities that made them able to overcome the lamprey depredations that once devastated Ontario's lake trout. This, along with their fast growth and hardiness, led to the program to stock them in Lake Huron to replace the depleted lake trout. First generation splake were also introduced into several northern lakes.

The Georgian Bay catches delighted fishermen and scientists alike. The success pointed to an even richer future. So popular was the fish with both anglers and commercial fishermen, that catches had to be curtailed in the early winter of 1980 to ensure that enough fish reached maturity to provide spawning stock. During that time, the Ministry also monitored potential spawning grounds to record spawning activity.

Farm-fresh Trout for Sale

Fish farming—or commercial fish culture—is a growing industry that has spurted in the province in the last five years. Last year, about 80 licensed fish

Ministry scientists take samples of lake waters so they can be tested for contaminants such as acid rain. They are then able to assess potential danger to fish and to the minute plant and animal materials that fish feed on.

Tuning In on Fish and Wildlife



farms produced more than $3 million worth of fish: mostly rainbow or brook trout.

Nearly all of these found their way to restaurant tables or stocked recreational waters. Fish farms which grow fish from egg or fingerling stages in earthen or concrete ponds can produce a standard eight to 10 ounce fish on a year-round basis.

In an effort to further encourage commercial fish culture, the Ministry appointed a Fish Culture Extension Biologist last year to review existing legislation and policies, and to provide technical and informational assistance to the industry and interested groups.

Work was initiated on a Fish Culture Handbook during 1980, in a joint project with the Ministry of Agriculture and Food. This Ministry is also involved in the co-ordination of MNR and OMAF fish culture research efforts and services to industry.

Ontario licences for commercial fish culture are limited to four species: rainbow and brook trout, small and largemouth bass. In future, it may be feasible to extend licences to farm other fish.

Acid Rain and Fish

Studies are under way in the Ministry of Natural Resources and the Ministry of the Environment to look into the effects of acid rain on our resources. Fisheries researchers are eager to find countermeasures to combat this contamination, but must study the specific impact on individual species before solutions may be advanced.

At the Harkness Laboratory in Algonquin Park last year, investigations into acid stress on lake trout, brook trout and whitefish continued, and a new study was begun on the early life stages of lake whitefish.

Researchers also studied the way acid rain affects the tiny floating animate sources of fish food—the zooplankton—to understand the impact this may have on fish communities.

A joint experimental project to evaluate the effectiveness of adding lime to lakes was undertaken last year with the Ministry of the Environment.

In other co-operative projects in 1980, approximately 7,500 fish samples were collected from 200 different waterbodies by MNR staff for testing by the Ministry of the Environment.

In addition, the analysis of 1,200 water samples from 1,000 sites across Ontario was completed in 1980 to determine the ability of these waterbodies to buffer acid rain.

Radio tracking of wildlife—such as bears and wolves—has been practised for over 20 years, so it's no news to the Ministry's wildlife research scientists.

But it is news to track fish.

Researchers working for the Ministry carried out tests last year on the behavior of lake trout in Lake Opeongo, in Algonquin Park.

The study used sonar transmitting devices (about the shape and size of a tube of lipstick) which were sewn to the fish, and which enabled the researchers to track the fish as they travelled around the lake.

The scientists were interested in discovering the general pattern of movement of the lake trout as they spawned, and the sonar devices provided them with some surprising information.

Before the study, scientists had thought that the fish returned to their favorite spawning beds every year, much like the Pacific salmon in British Columbia. The devices showed, however, that the fish move haphazardly from spawning bed to spawning bed—beds which might be anywhere from a few feet to three miles apart.

The sonar devices also allowed Ministry researchers to discover that fish behave differently depending on their sex and age. The most mobile were the older

females; young males moved around the least. The scientists suspect that it is the older females who decide where the location of spawning grounds will be, and that the males don't have much to say about it.

Staff at the Ministry's Maple wildlife research unit began working on a device that will miniaturize the current sonar devices used on fish. The devices in use at present are suitable with fish which are five pounds or more. The new device should be usable with much smaller fish.

Small is Good for Wildlife Tracking

The tiny fish "tracking" device was developed from a miniature unit designed for animals.

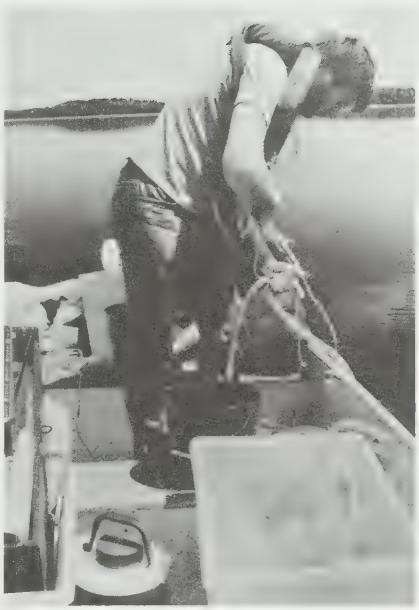
Early (and bulky) radio tracking collars have certainly helped in wildlife management, but they could only tell researchers *where* an animal was.

Our researchers last year pioneered a revolutionary miniature tracking device that can tell wildlife scientists not only where an animal is located, but also the temperature of its den, whether or not it is still alive, whether it is moving, and potentially much more.

The big increase in information was made possible by incorporating developments in the field of micro-chip circuitry with wildlife tagging.

The tracking devices developed and produced by our scientists are the smallest ever made, and can provide the most information. The size of the device allows the researchers to gather data without interfering significantly with the animal's natural behavior.

Volunteers Added to Enforcement Staff



The need to increase our enforcement capabilities led to the establishment of a Deputy Conservation Officer Program in the spring of 1981. This was in response to increasing desire by members of the public interested in the outdoors to become active participants in the enforcement of fishing and hunting regulations. All deputy conservation officers are volunteers trained in enforcement techniques before being appointed in their roles by the Minister of Natural Resources.

Deputies perform the same basic functions as regular conservation officers—management and enforcement. Up to March 31, almost 200 deputies had been trained and were ready to assist in enforcement during the fish run and the upcoming hunting season.

1980-81 Fisheries Program Highlights

- MNR fish hatcheries produced the 7,589,585 fish and 81,000 eggs stocked into Ontario waters during the year.
- Resident and non-resident anglers caught and retained more than 90 million fish.
- An expenditure in excess of $500,000 was made to repair damaged fish habitats.
- A total of 7,500 fish from 200 waters were collected by MNR and tested for potential chemical contamination in Ontario Ministry of the Environment laboratories.
- In another test, 1,200 water samples from 1,000 sites were analysed to determine ability to buffer acid rain.



Ministry Develops Energy Five-Year Action Plan

Administration

The Ontario Government is committed to increase the level of energy self-sufficiency in the province by 12 per cent by 1995.

To focus MNR's contribution to this commitment, an internal Energy Task Force developed a five-year Energy Action Plan, now in the process of being implemented.

The Action Plan features a number of MNR/Energy Ontario projects (managed by Natural Resources staff and funded by the Ministry of Energy and other provincial ministries).

One such project—already mentioned on page 36 of this annual report—involves the installation of solar panels on the roofs of a number of comfort stations in certain provincial parks.

In another energy-related project, the Ministry funded the conversion of 51 pickup trucks in its fleet to operate on propane gas. The trucks, in use at nine MNR locations in the province, are used alongside conventional gasoline-powered vehicles.

A study is under way to determine how the propane-powered vehicles stack up against their conventional competition. Propane is about 40 cents a gallon cheaper than gasoline and burns more efficiently.

The test vehicles are equipped with 45 to 50-gallon liquid propane tanks. The propane is stored under pressure and pumped to the engine much like a gasoline-using vehicle. While the performance of the trucks is still being reviewed, the early reaction has been very good.



Last year, 51 MNR trucks were converted to operate on propane fuel as an energy conservation project.

Other energy-related projects initiated, include studies to evaluate the potential of uranium and peat as energy sources in the province, and the undertaking of the Ontario Householder Home Heating Survey. The survey is designed to determine and analyse the past, present and future of domestic fuelwood heating in Ontario with emphasis on rural areas of the province. The survey is a joint MNR/Energy Ontario project.

Total MNR Staff

March 31, 1981	Regular	Unclassified	Total
Main office	880	420	1300
Field offices	3502	1216	4718
Total	4382	1636	6018

Two Employees Awarded for Bravery



Premier William Davis congratulates MNR heroes Frank Hicks of Huntsville and Bob Grant of Kenora. Both men received Canada's Star of Courage last year.

Two Ministry employees received the Star of Courage during 1980. The award is the country's highest recognition for bravery, and is presented by the Governor-General of Canada only to those who perform the most conspicuous acts of bravery.

The employees, Frank Hicks and Bob Grant, both displayed incredible courage in rescuing three people in two separate incidents during the early spring of 1979.

Mr. Hicks is a biologist based in Huntsville, and Mr. Grant is a Ministry pilot at Kenora.

When snowmobilers fell through the thin ice on Baptiste Lake near Port Hope, Frank Hicks used a ladder and a canoe to get two of them to safety. His valiant rescue occurred in the dead of night, and the waters of the lake were icy cold.

Bob Grant, and commercial helicopter pilot Brian Clegg of Niagara Falls, rescued a passenger of a downed aircraft from the freezing waters of Lake of the Woods. Mr. Clegg piloted his helicopter in the foulest of weather while Bob Grant climbed out on the skid, straddled it, and lifted the woman from the water.

Mr. Grant remained on the skid holding her until the helicopter landed safely near a hospital. Mr. Clegg was also awarded the Star of Courage.

The quick thinking, resourcefulness and courage of Frank Hicks and Bob Grant were also recognized by awards from the Lieutenant-Governor, the Premier and this Ministry.

Administration Keeps the Ministry Going

Administration, put simply, is the combination of people, policies and procedures that keep the Ministry running smoothly.

The Ministry of Natural Resources' administrative structure is decentralized. Policies and targets are set at main office, where guidance and support are provided to the front-line or field staff scattered throughout the province. This decentralization allows the field staff to respond quickly and sensitively to local requirements. For administrative purposes, the Ministry staff and facilities are divided into eight Regions and 47 Districts.

A good test of the Ministry's administration came during 1980-81. The summer of 1980 was the worst forest fire season since 1923, with three months of intense fire activity in the Northwestern and North Central Regions of the province.

During the emergency periods occasioned by large fires such as Red Lake 14, Kenora 23, Ignace 27 and Thunder Bay 46—along with the hundreds of smaller fires breaking out at the same time—Ministry staff turned to dealing with fire-related problems first, and their regular tasks later. Not only did all MNR people in fire-affected areas go on full-time fire duty, but hundreds of staff from other parts of the province also joined them either to fight fires or to provide administrative support.

Although the Ministry was required to maintain only minimum services throughout the province during the fire emergency period, the fiscal year ended with most program objectives met or surpassed.

Senior Staff Changes

There were several important senior staff changes during 1980-81. Heading the list was the appointment of W. T. (Bill) Foster as Deputy Minister, replacing Dr. J. K. Reynolds, who retired in December. Mr. Foster assumed his new duties on January 1, 1981.

In addition, George McCormack was appointed as Assistant Deputy Minister for Northern Ontario; Don Johnston was appointed Regional Director, Northwestern Region; and Art Holder was appointed Director, Fisheries Branch.

Last year also saw the creation of two new positions—Provincial Fisheries Scientist (Ken Loftus), and Science Adviser and Research Co-ordinator (Dr. Martin Walmsley).

The total number of permanent Ministry staff was down to 4,382 on March 31, 1981, from 4,429 on the same date in 1980, primarily because of a reduction in main office positions. Field staff levels remained fairly constant through the year.

The continuing reorganization led last year to the consolidation of four district offices into two. The White River and Wawa district offices were combined into a larger district based in Wawa. During the year, the Ministry announced that the Lanark and Ottawa district offices were being combined into a new district, which will be based in and named Carleton Place. Both of these measures were introduced to achieve operating economies while making sure that effective service continues to be provided to the people of the areas.

Major Exhibit Featured Conservation Theme



Youngster reaches around her balloon string to stroke fisher pelt at MNR's popular exhibit at Sportsmen's Show last year. Exhibit attracted over 200,000 visitors.

The Ministry's exhibits program included major presentations at the Toronto Sportsmen's Show, Central Canada Exhibition, Canadian Lakehead Exhibition and the International Plowing Match near Aylmer.

The theme of the Sportsmen's Show exhibit—the major annual MNR display with an audience of more than 200,000—was devoted to conservation ideas in wildlife and fisheries management, as well as the Ministry's various energy conservation initiatives.

The Ministry also participated in the Ontario Government exhibit at Windsor, timed to coincide with the U.S. Republican Convention at Detroit. The majority of MNR districts did one or more displays or exhibits during the year, as did several program branches in main office, for an overall total of 59.

Management Improvement Plan Goes Into Final Year

Well into the third and final year of the Ministry's Management Improvement Plan (M.I.P.), the program made significant progress during 1980-81 towards reaching its broad objectives.

Among the plan's accomplishments last year was a reduction in main office staff by approximately 200 positions. This number actually exceeds the targeted figure of the plan by about 10 per cent.

Also under M.I.P., a Management Information System was developed to allow managers in main office and the field to obtain better data upon which to base their planning and managing of programs and services.

During 1980-81, a Communications Strategy for the Ministry was also developed, to more effectively communicate both to the public and to staff. Implementation was to begin during 1981.

The Management Improvement Plan also sponsored a series of management training seminars which were attended by all the Ministry's managers and supervisors—over 700 people. The training program was designed to improve the overall management of employee performance.

Affirmative Action Program Makes Gains

The long-term goal of the Affirmative Action Program is to have women represented in at least 30 per cent of all categories in the Ministry by the year 2000.

Because a great number of job categories in MNR have traditionally been filled exclusively by men, a concerted effort is being made to open up those areas in instances where women can perform on a par with male candidates.

A push is also on to train and upgrade women to managerial levels.

Last year, there were 18 targeted classifications for hiring or promoting women; areas where women were definitely under-represented. Overall, hirings or promotions during 1980 exceeded the targets, except for two priority areas. There was also an increase in hirings or promotions in non-targeted areas.

Growth was also seen last year in the number of women in professional and technical positions requiring resource management training—the number of resource technicians increased 41 per cent. Women's participation in technical services and administration improved as well.

To encourage increased upward mobility, short-term assignments with developmental potential were assigned. This involved 54 women in secondments, job rotations or acting appointments and facilitated competition for high-level positions.

Affirmative Action Committees composed of elected representatives from groups and regions met regularly during the year to learn developmental techniques. They, in turn, organized courses such as Assertiveness Training or Career Planning for MNR employees throughout the province. The Committees also acted as an Affirmative Action information resource.

An Affirmative Action Task Force composed of both men and women from several levels of staff completed a report last year which made recommendations for improving the program. The bi-monthly Affirmative Action newsletter was produced by six different regions and distributed through the Ministry. Through personal experience articles by women new to certain job categories, reportage on regional developments, comments and general articles, the newsletter presented a lively and candid picture of the program as it developed.

Much has been accomplished since the initiation of the Equal Opportunity Program (forerunner of Affirmative Action) in 1975. Last year, MNR hired its first female Conservation Officer, District Parks Supervisor, Pits and Quarries Inspector and Fire Prevention Officer—each a definite milestone for Affirmative Action.

Ministry of Natural Resources
Statements of Budgetary Revenue and Expenditure for the Year Ended March 31, 1981

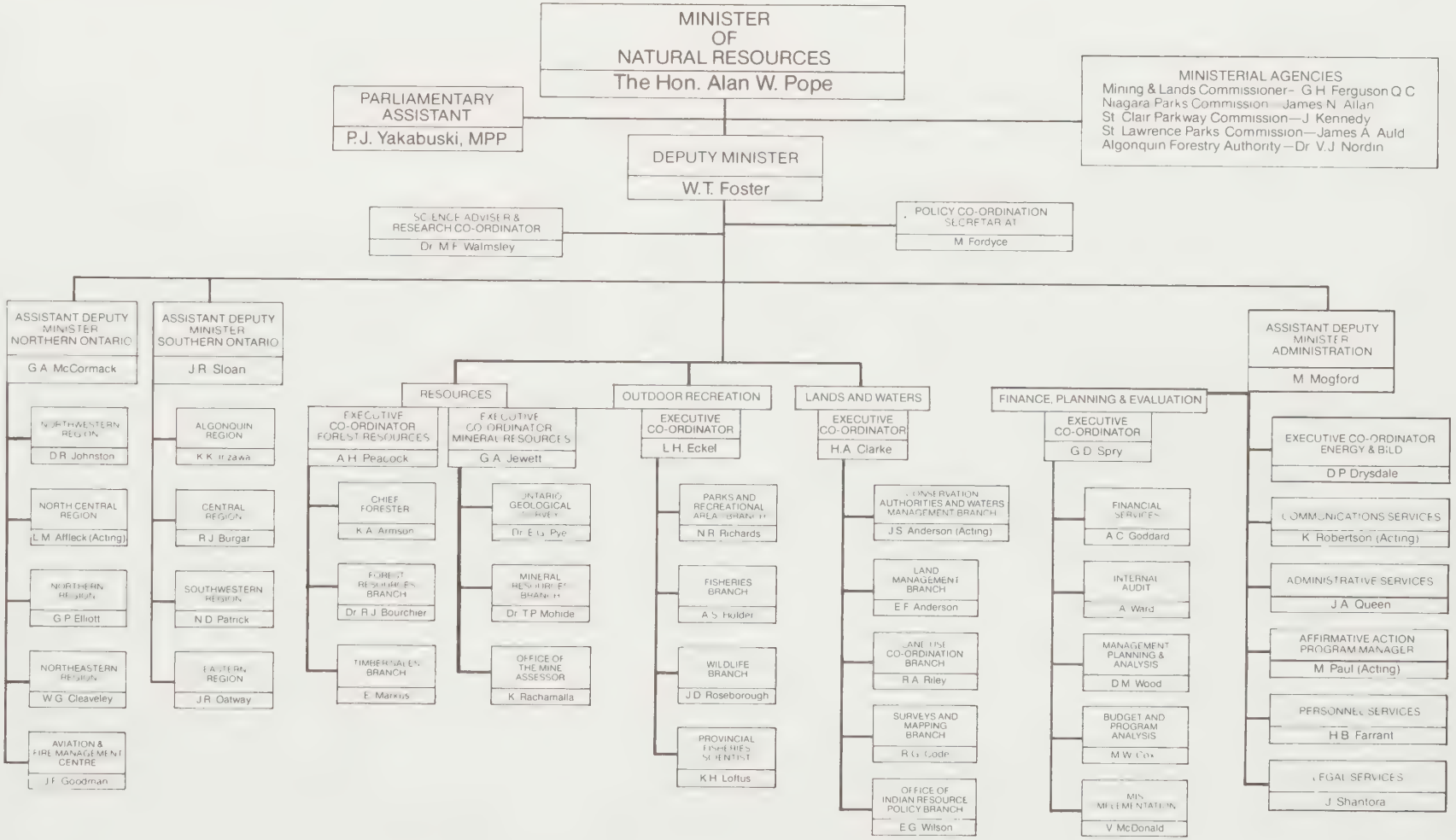
Ministry of Natural Resources
Statement of Budgetary Revenue
for the Year Ended March 31, 1981

Ministry Administration Program	**($thousands)**	**($thousands)**
Reimbursement of Expenditures		
Government of Canada	55	
Other	7	
Sales and Rentals	1,556	
Recovery of Prior Years' Expenditures	73	
Other	24	
Total for Ministry Administration		1,715
Land Management Program		
Royalties		
Water Power	19,159	
Timber Area Charges	4,401	
Mining		
Acreage Tax	590	
Fees and Licences	672	
Reimbursement of Expenditures		
Government of Canada	435	
Other	794	
Sales and Rentals	5,676	
Recovery of Prior Years' Expenditures	279	
Other	33	
Total for Land Management		32,039
Outdoor Recreation Program		
Reimbursement of Expenditures		
Government of Canada	2,719	
Other	55	
Recreational Areas	6,645	
Fish and Wildlife	14,308	
St. Lawrence Parks Commission	3,623	
Recovery of Prior Years' Expenditures	35	
Sales and Rentals	385	
Royalties	1,201	
Other	25	
Total for Outdoor Recreation		28,996
Resource Products Program		
Mineral Management		
Profits Tax	160,472	
Royalties	2,381	
Fees	306	
Forfeitures	1	
Recovery of Prior Years' Expenditures	13	
Sales and Rentals	848	
Forest Management		
Stumpage	47,267	
Forest Products	283	
Stock Production	609	
Reimbursement of Expenditures		
Government of Canada	2	
Other	14	
Recovery of Prior Years' Expenditures	1	
Sales and Rentals	242	
Royalties	77	
Total for Resource Products		212,516
Resource Experience Program		
Frost Centre Facilities	296	
Total for Resource Experience		296
Total Budgetary Revenue		275,562

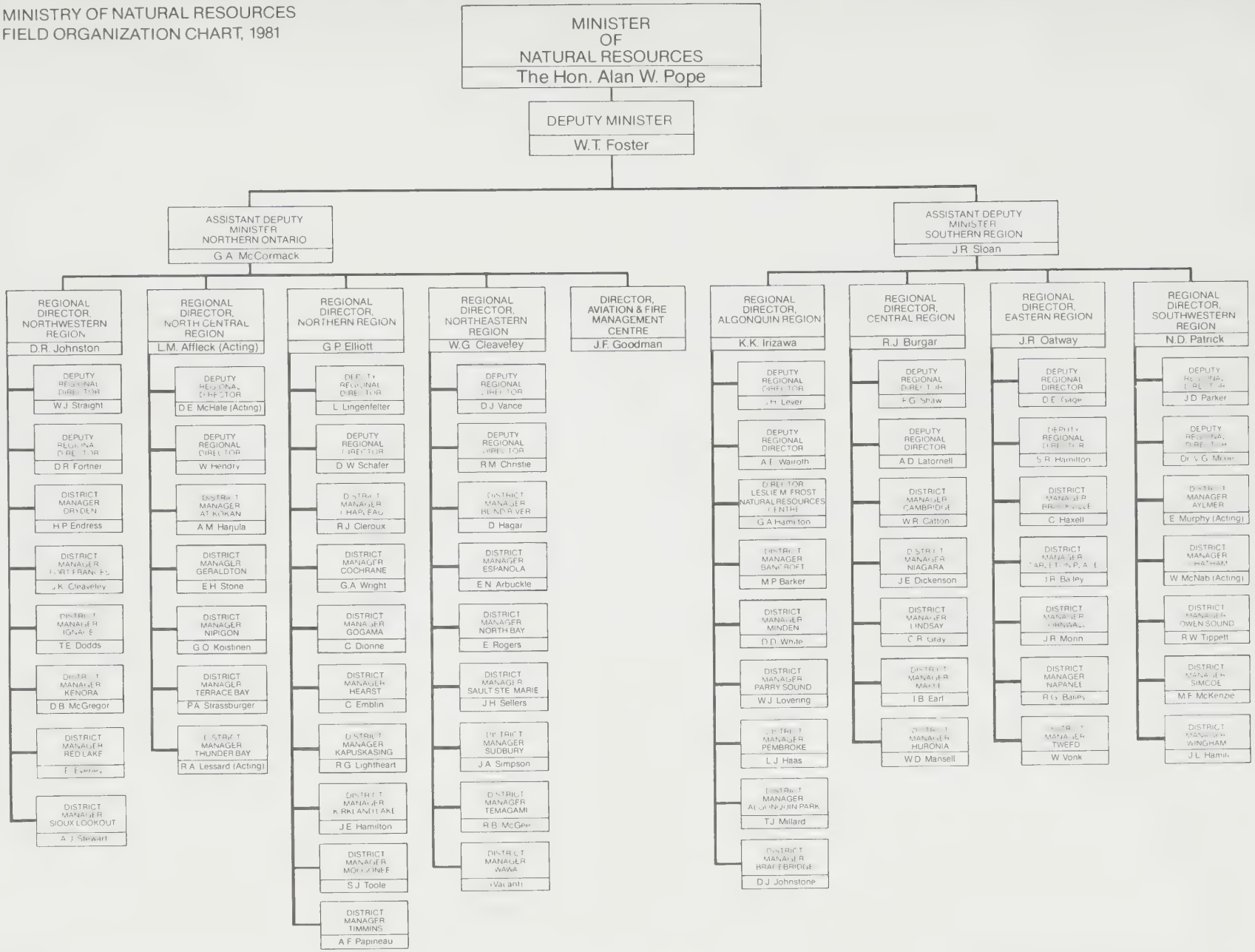
Ministry of Natural Resources
Statement of Budgetary Expenditure for the Year Ended March 31, 1981

Ministry Administration Program	($thousands)	($thousands)
Main Office	3,878	
Financial Services	2,090	
Supply and Office Services	3,581	
Personnel Services	1,357	
Information Services	1,077	
Systems Development Services	76	
Legal Services	661	
Audit Services	611	
Field Administration	16,244	
Total for Ministry Administration		29,575
Land Management Program		
Water Control and Engineering	13,202	
Forest Protection	22,540	
Air Service	8,103	
Extra Firefighting	35,417	
Resource Access	4,435	
Land and Water Classification	8,431	
Land, Water and Mineral Title Administration	10,962	
Conservation Authorities	40,569	
Basic Mapping and Geographic Referencing	2,066	
Total for Land Management		145,725
Outdoor Recreation Program		
Recreational Areas	33,070	
Fish and Wildlife	32,616	
St. Lawrence Parks Commission	8,787	
Wasaga Park Community Project	6,547	
Total for Outdoor Recreation		81,020
Resource Products Program		
Mineral Management	12,268	
Forest Management	71,510	
Total for Resource Products		83,778
Resource Experience Program		
Junior Rangers	4,426	
Youth Corps (Experience '80)	3,766	
Leslie M. Frost Natural Resources Centre	1,185	
Total for Resource Experience		9,377
Total Budgetary Expenditure		349,475

MINISTRY OF NATURAL RESOURCES
ORGANIZATION CHART 1981



MINISTRY OF NATURAL RESOURCES
FIELD ORGANIZATION CHART, 1981



Associated Agencies, Boards and Commissions

The Ministry of Natural Resources is associated with a number of agencies, boards, and commissions. Each of these associations is based on natural resources management, but the Ministry's relationship with particular groups can vary.

Some relationships are informal. The Ministry is Ontario's official natural resources manager, and often participates informally in the activities of other government and private agencies to promote co-operation in the field.

Other relationships are more direct, through the existence of administrative or financial links between different groups and the Ministry. Some of these related agencies produce a separate annual report outlining their activities. A list of these groups follows, and the reader should refer to the specific annual reports of the following for more information:

- Algonquin Forestry Authority
- Conservation Authorities (Ontario had 39 Authorities during 1980-81)
- Niagara Parks Commission
- St. Clair Parkway Commission
- St. Lawrence Parks Commission
- Provincial Parks Council
- Canada, Ontario, Rideau, Trent, Severn (CORTS) Advisory Committee

The following provides a brief description of the agencies, boards, and commissions that are either financially or administratively associated with the Ministry, and that produce no annual report.

Crown Timber Boards of Examiners

The Boards are made up of Ministry staff, and each year they set written and practical examinations in wood measurement. The Boards then recommend that successful examinees be issued with a Scaler's Licence by the Minister. During 1980-81, two Boards held two courses at Pembroke. Of 133 students examined, 113 successfully completed the examinations, and were recommended to receive a Scaler's Licence.

Game and Fish Hearing Board

The Board, comprised of not more than five members, who are appointed by the Lieutenant-Governor-in-Council, conducts hearings following the refusal by the Ministry of an application for a commercial hunting or fishing licence. The Board hears evidence, and delivers a written summary and recommendations to the Minister, who may or may not decide to issue the licence.

Geoscience Research Review Committee

The Committee was established in April, 1978, to advise the Minister on geoscience research priorities and the merit of research proposals which are submitted to the Geoscience Research Grant Program of the Ontario Geological Survey.

The 11-member committee is made up of representatives from industry, universities and government, and makes recommendations regarding research goals, provides peer review and recommends the awarding of grants to successful applicants. In the past year the program awarded 29 research grants totalling $499,600 to ten Ontario universities.

Ontario Geographic Names Board

The Board, which meets quarterly, has authority over Ontario's geographical names. Last year the Board approved 567 names. The names are disseminated to other agencies and become official for use on maps, charts, in gazetteers, property descriptions, and other documents. The Board makes decisions regarding contentious geographical names or those involving conflicts of interest.

Public Agricultural Lands Committee

Comprised of staff from the Ministry and the Ontario Ministry of Agriculture and Food, this committee reviews all applications for public lands required for agricultural purposes. During 1980-81, the committee dealt with 19 applications, most of which were from farmers wishing to enlarge their operations on Crown lands in northern and northwestern regions.

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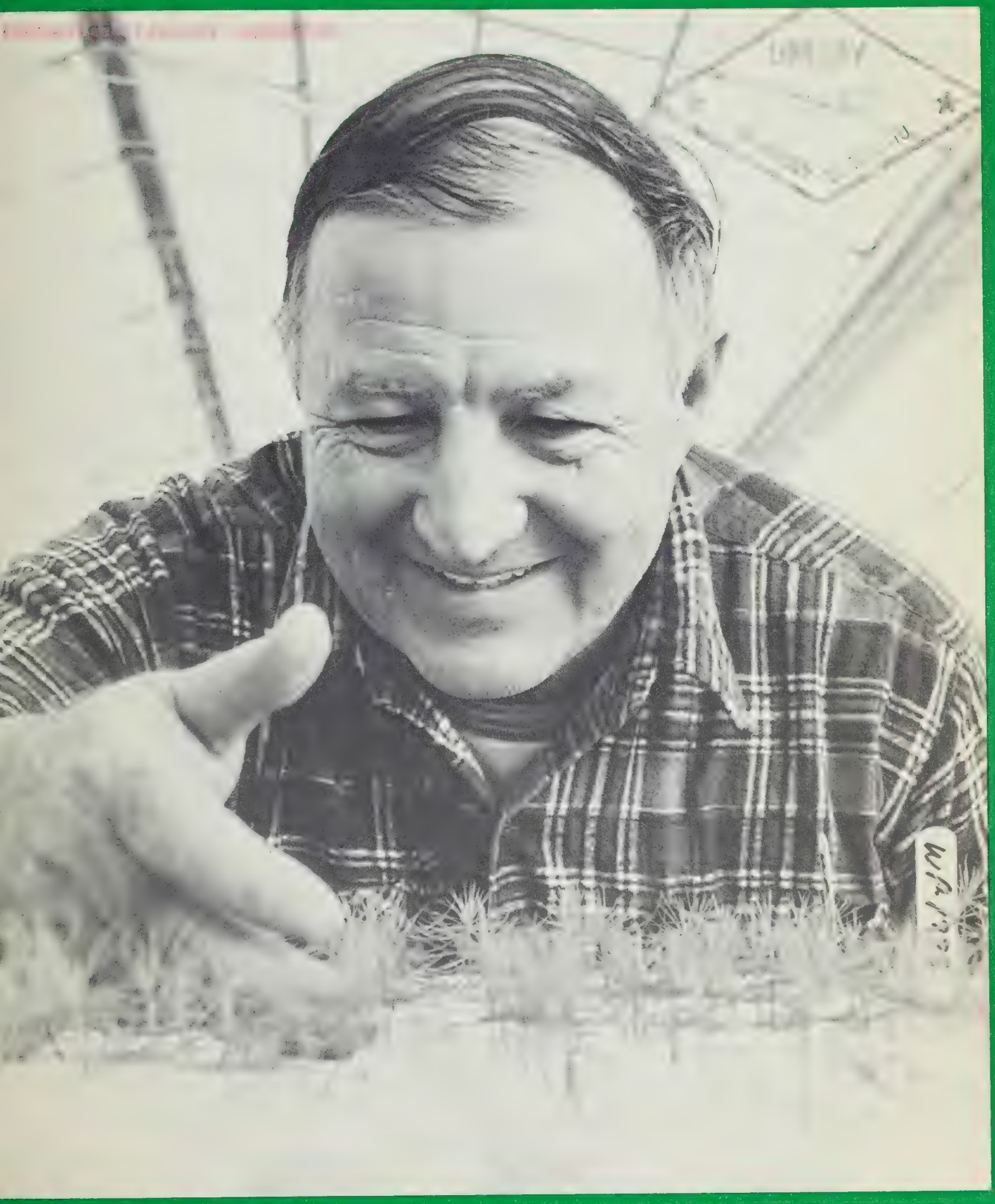
Government Publications

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- A56

Ontario

Annual Report 1982

Minister of Natural Resources



Fiscal year ending March 31, 1982

Annual Report of the Minister of Natural Resources of the Province of Ontario

TO HIS HONOUR
The Lieutenant-Governor
of the Province of Ontario

MAY IT PLEASE YOUR HONOUR
The undersigned begs respectfully to present to your Honour the Annual Report of the Ministry of Natural Resources for the fiscal year beginning April 1, 1981, and ending March 31, 1982.



Alan W. Pope
Minister

$2.00

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Front cover: MNR nursery manager checks progress of nine-week-old white pine seedlings at the Ontario Tree Improvement and Forest Biomass Institute at Maple, Ont. Seeds were obtained from select trees in Algonquin Park.

Back cover: Technician at the Institute prepares hybrid poplar cuttings which will be "rooted" and then planted in the Maple nursery groves. The tree section in the background is from a 19-year-old hybrid poplar.

All photographs taken by Ministry staff.

Minister's Message



In our last Annual Report, I stressed my Ministry's commitment to provide information to the public and to consult them on all issues of concern. As I review the Ministry's accomplishments of 1981-82, I am pleased that we have maintained and improved our public dialogue, particularly in the areas of land use, parks and forest resources planning.

I find it very encouraging that the private sector, not only resource industries and special interest groups, but also individual residents, has become more and more involved in co-operative programs with this Ministry. The forest industry, for example, took on added responsibilities in preventing and fighting forest fires and utilized Ministry expertise in its training programs for workers.

A spirit of volunteerism became apparent in co-operative fish stocking and stream rehabilitation projects between the Ministry and anglers' and fishermen's groups. We also have a dedicated group of volunteer conservation officers as well as the beginning of voluntary service in the parks area to help ensure a high quality of recreational opportunities. Also mentioned in this report is the help we have received from outdoors groups in maintaining deer wintering areas and moose habitats. And there are many other examples. I'd like to commend those who have become active in co-operative resource management. Help from highly motivated individuals and groups produces tangible results.

The Ministry's main objective is to manage the province's resource base for the greatest benefit of *all* of Ontario's citizens. To do this, we have developed land use strategies for the province which will provide guidelines to integrate policies for all resources. The finishing touches have been applied to the District Land Use Plans and they are going before the public for comment during 1982.

Early in March, 1982, I tabled in the legislature a package consisting of the Task Force Report on Parks System Planning, background comments for District Land Use Planning, a summary of public response to Southern Ontario land use planning and two draft Forest Management Agreements. These demonstrated our thorough approach to identifying all resource use possibilities and our commitment to public consultation in planning for the future.

In these days of economic restraint the Ministry has sought to develop new ways to deliver programs and services, while endeavoring to hold the line on quality. In some cases, we have had to alter timetables and look for longer term results; in others, some truly innovative solutions have been developed.

During the year a number of projects funded by the Board of Industrial Leadership and Development (BILD) Program were initiated. A total of $13.4-million was committed to Ministry projects in 1981-82 by BILD to go toward stimulating exploration and production of minerals; encouraging regeneration and silvicultural work in forestry; and assisting several projects in other resource areas.

We are also concerned with the people who work in our resource industries. Because of the economic downturn, many mining and forestry workers have been laid off. To keep these skilled workers from leaving their communities in search of other jobs, I was able to interest the federal government in a bridging program to put many of them back to work. By utilizing a section of The Unemployment Insurance Act and providing additional provincial and federal funds, we encouraged companies, groups and municipalities to develop programs that would keep these skilled workers in their communities. We will continue to examine opportunities to assist economically stressed resource-dependent areas until the economy recovers.

Our policies will continue to reflect our concern both for the people who are involved in resource industries and for those who eventually benefit from the wise management and use of Ontario's natural resources.

Alan W. Pope

Deputy Minister's Message



There are many programs in the Ministry of Natural Resources devoted to dealing with the problems that arise when the forces of nature must be reckoned with. We must, therefore, maintain a state of preparedness to deal with these occasions. Forest fires and floods, shoreline erosion, forest-destroying pests, wildlife nuisances and many other types of problems can occur when nature goes awry.

Our excellent state of readiness for the majority of the year's major problems is a tribute to the Ministry staff who planned and carried out everyday tasks.

Though early weather conditions gave every indication of presenting us with as devastating a fire season as that of 1980, we had been voted $4.5-million in extra funds and were able to use the money to prepare for this possibility. As a result, the fires of 1981 caused much less damage than those of the previous year. During the 1981 fire season, a total of 1,656 fires burned 179,473 hectares compared to 1,779 fires and 558,468 hectares burned in 1980.

We were also fortunate in the early spring when nature co-operated and did not send several predicted deluges of rain during ice break-up in the south. Thus, the possibility of severe flooding was averted. During that time, the Ministry's Streamflow Forecast Centre kept district offices, conservation authorities and municipalities supplied with daily bulletins on flood potential. This centre is scheduled to have a completely computerized flood forecasting system in operation across the province to deal with the 1983 season.

Several major flood control projects in various stages of construction in both Northern and Southern Ontario will, when completed, protect people and property in these areas from flood damage.

Noteworthy developments during 1981-82 were the signing of three more Forest Management Agreements; a BILD program to stimulate the exploration for, and development of, industrial minerals; the release of a discussion paper on wetland policy; the development of new methods for using satellite imagery in resource planning; and greater public involvement in parks, land use and resource planning.

I would like to thank those of you who wrote to me last year with comments on the changed look of our Annual Report. Your positive response and enthusiasm made me aware that we share a pride in this Ministry and a commitment to the wise use of our resources.

W. T. Foster



Lands and Waters Management

Strategic Land Use Plans

Our province-wide land use planning exercise is a first for Canada. We believe it is also the most comprehensive public consultation program of its kind anywhere in the world. The three Strategic Land Use Plans for Ontario provide a framework that encompasses policy and strategies to ensure that land, water, forest, fish, mineral, wildlife and park resources are managed for maximum public benefit. Through consultation with the public and various interest groups in 1981-82, Ministry officials have been striving to get balanced consideration of all resource uses within a policy of multiple-use land management and to give due consideration to all elements in the land use equation. District Land Use Plans were being prepared to be presented for public input before the end of the summer of 1982 through a series of "open houses" across the province. The public will be invited to review proposals and contribute to their development and implementation.

Task Force on Parks System Planning

Because land use plans must take into account the need for various types of provincial parks, a special Task Force on Parks System Planning was established in 1981. A report prepared by this group, released early in 1982, contains guidelines that allow for full consideration of park options in the planning process.

A balance is being sought between parks' needs and other resource objectives such as forest management and mining. Some 240 candidate provincial parks, containing significant natural, cultural and recreational environments, were identified. Where curtailment of existing or potential resource production would create community economic problems, other uses will be allowed as long as they do not have a negative effect on the parks' long-term values. Again, balance is the key management concept.

Left: MNR's computerized flood forecast system will make it easier to pinpoint potential danger from rain storms, melting snow and ice.

Land Information Organized and Managed in New System

The development of a geographical referencing data base system continued in 1981-82. This is a framework for the orderly storage, management and retrieval of land mass information. Work continued on research and development of the basic concepts for a computer-supported system for storage, processing and retrieval of information. Still to be completed is the design and development of a system that can be used throughout government to provide faster, more efficient information exchange. The Ontario Basic Mapping Program will provide the topographic information necessary for the provincial geographical referencing system and will assist the private sector.

Township Boundary Re-establishment Program Nearly Complete in Southern Ontario

Land-owners, resource industries and resource managers all share a concern about the lack of clear-cut boundaries in many townships. In some cases the boundaries were destroyed by forest fires; in others, the age of the original township surveys, particularly in the less settled parts of the province, makes the boundaries suspect. A long-term program introduced 20 years ago to resurvey those township boundaries which have not been updated by settlement or development will be completed in Southern Ontario in 1982.

Re-establishment is centred on township boundaries on the Canadian Shield where lack of agricultural use of land meant there was little road or fence construction.

Last year, 405 kilometres of township boundaries were resurveyed across the province, bringing the total to 8,375—4,375 in Southern Ontario and 4,000 in the North.

Mapping Ontario Resources From Satellite Data

During the year, the Ontario Centre for Remote Sensing (OCRS) finished developing its computerized system--the first of its kind in Canada--to produce color-coded hard-copy maps from computer analysed satellite data. This mapping system was used to produce resource maps of larger regions of the province, providing information on northern forest resources and on types of land use, as well as the most accurate and comprehensive information available on Ontario's peat resources.

The new mapping system will allow data from satellites to be much more widely applied to resource management programs and will assist investment decision-makers in the private sector.

Aerial Photography Tells if Forest Regeneration is Working

To tell how forest regeneration is progressing, the conventional method relies on data gathered by ground survey five to seven years following seeding or planting. A program introduced last year makes it possible to use color infrared aerial photography to monitor reforestation efforts much more quickly.

Three scales of photography are obtained, one for initial stratification of the treated area, the other two for the detailed sampling of tree stocking and density, using specially designed template overlays. Additional information on forest conditions, such as location of frost kills, can also be obtained from the photography. The technique is cost-effective, rapid, more thorough than the previous method and is an aid to improved reforestation.

New Public Access to Lake Ontario

Since 1971, approximately $3-million has been invested to acquire lands, to help stabilize a portion of actively eroding shoreline, and to develop a variety of recreation facilities serving the needs of residents of the Niagara Peninsula, the Hamilton-Wentworth Region and tourists using the Queen Elizabeth Way corridor. To date, picnic facilities, fishing ponds, a beach area, education/interpretation facilities, parking areas and campground services have been developed. In addition, the Hamilton Region Conservation Authority is developing a small-craft mooring basin to meet the ever-increasing demand for boating facilities on Lake Ontario. Funds estimated to complete the Fifty Point Development are set at approximately $2.6-million.

Watershed Management Advisory Board set up to Reduce Flood-Related Damage to Life and Property

Long susceptible to flooding and property damage, the Sturgeon River/Lake Nipissing/French River system has been the subject of study, public meetings, workshops, and information sessions in North Bay, Sturgeon Lake and Noelville.

A most important recommendation resulting from the Watershed Study and the public participation sessions, was to create a Watershed Management Advisory Board to report to the Minister of Natural Resources. The members of this board were appointed early in 1982. Other action was undertaken in 1981-82, including installation of water-level gauges, improvements to the flood forecasting system and to the operation of the Lake Nipissing outlet control dams, and relocation of the community of Field. Detailed mapping of flood-prone areas in the watershed is in progress, to be completed next year.

Dyke System Holds Back Saugeen and Teeswater Rivers

Some 160 kilometres north of London lies the village of Paisley, for years prone to severe annual flooding from the Saugeen and Teeswater Rivers and Willow Creek. Following the 1977 flood, which inundated the entire downtown business section, the Saugeen Valley Conserva-







tion Authority, at the village's request, undertook a flood control study. A system of dykes along all three watercourses, when completed, will maximize flood level protection over the developed 81 hectares of the village with minimum disruption to existing land uses. Some 500 people and $6-million worth of buildings and land are expected to benefit from the project, now estimated to cost $1.2-million. During 1982, the first phase of the dyking project was completed, providing regional storm flood protection from the Teeswater River.

Three Thousand Homes Saved from Flooding in Thunder Bay

During 1981-82, work continued on the Neebing-McIntyre diversions at Thunder Bay, to be completed in 1984.

These will minimize the effect of flooding caused by inadequate channel capacity on the Neebing and McIntyre Rivers. The diversion will also eliminate most of the spring flooding in the inner-city area of Thunder Bay. Without the diversions, it is estimated that a storm could cause main floor flooding in 1,000 homes, with basement flooding in an additional 3,000 homes. In addition, much of the commercial and industrial area in the mid-city core could also suffer flood damage.

Streamflow Forecast Centre Warns of Flood Danger

By the end of next year, a computerized flood forecasting system will be in operation across the province. It will use water data from Weather Office teletype lines, precipitation and streamflow inputs from the field, and radar precipitation data to run the National Water Service River Forecast model.

The Forecast Centre now has five per-

Left, and above: Working in all conditions, MNR constructs resource access roads in Northern Ontario—611 km of roads were built in 1981-82. Access roads provide many benefits.

manent staff and is supported by 145 hydrometric stations. Test calibrations have been done on the Conestoga River and Medway Creek to assist in the software development from streamflow forecasting. Twelve data collection platforms in Northern Ontario provided streamflow and hydrometric data for the spring, 1982, run-off.

Public to Participate in Shore Zone Management

Water management activities are directed to reducing flooding and erosion damage along the Great Lakes shores. This is done through public awareness programs and by providing information on flood and erosion-susceptible areas.

In 1981-82, a publication, *Canada/Ontario Great Lakes Shore Management Guide*, was available to assist municipalities and Conservation Authorities in planning for reduction of damages due to flooding and erosion. The booklet also designates shore uses to provide the best overall public benefit without disturbing sensitive ecosystems such as wetlands.

The Ministry has also completed its *Great Lakes Shore Process and Shore Protection*, a publication that provides general engineering advice on shore protection. The public is encouraged to use both publications, through a series of information and training programs.

New Sites for Hydroelectric Power

With funding provided by the Ministry of Energy, a consultant was retained by the Ministry of Natural Resources in 1981-82 to prepare a manual for assessing the potential for hydroelectric energy at existing dam sites. Regional engineers also started an inventory and evaluation of energy potential at numerous sites. When the work is completed in 1984, the most promising sites identified will be offered for development to interested parties.

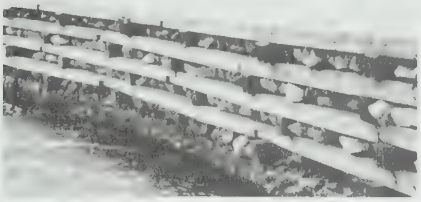


Above: Construction stage of floodway portion of Neebing-McIntyre diversion project at Thunder Bay—to be completed in 1984.
Right, below: Reconstruction of the Memorial Avenue Bridge in Thunder Bay—also part of the diversion project which will protect homes and businesses from flooding.

1981-82 Lands and Waters Program Highlights

- In the Ontario Basic Mapping Program, 1,100 maps were produced in 1981-82, bringing the total to 2,800 maps produced since the program was initiated in 1978.
- Some 240 potential park candidates were identified.
- The Canada-Ontario Flood Damage Reduction Program invested more than $1.5-million in 22 flood-risk mapping projects, which were done in conjunction with the federal government and Conservation Authorities/ Municipalities.
- The township boundary resurvey program added 405 kilometres last year to bring the total to more than 8,000 kilometres of boundaries resurveyed to date.
- Through MNR's resource access program to open up Northern Ontario, 611 kilometres of roads and three major bridges were constructed at a cost of $11.2-million.





Left: Many methods and materials are used to stabilize stream banks against erosion.



Forest Resources Management

Rural Land-owners Queried Regarding Land Use and Woodland Management

An extensive and comprehensive survey of rural private land-owners throughout the province was undertaken during 1981-82. The Ministry's Forest Resources Group was partnered in this project by the Great Lakes Forest Research Centre of the Canadian Forestry Service in Sault Ste. Marie. The project was supported by the Ontario Forestry Association. Questionnaires were mailed late last spring to some 12,400 rural land-owners, representing five per cent of the land-owners holding 50 or more acres in Southern Ontario and 10 per cent in the North. Respondents were asked to describe their property and answer questions relating to general land use and specific woodland management activities. About 76 per cent of the questionnaires were returned and were then analysed. The report of this survey, entitled *Rural Lands and Landowners of Ontario: A Private Land Forestry Perspective*, will be tabled shortly and released for public distribution.

Several of the more significant findings of the survey are as follows:

- The survey response rate of 76 per cent suggests an awareness and concern by Ontario rural private land-owners for land use and management of their property.
- There is quite a rapid rate of ownership turnover, which must be considered in the design of private land forest management programs.
- An overwhelming majority of private forest land-owners in Ontario hold forest property for primary reasons which are not related to monetary or material gain.
- Most rural landholdings contain some amount of woodland, but the acreages tend to be relatively small, particularly in Southern Ontario.
- A large majority of the current woodlot owners have not harvested forest products from their woodland for commercial purposes.
- Non-resident ownership is uncommon among Ontario's rural land-owners.

Roads to Resources

In 1981-82, close to $10-million was spent under the DREE Forest Management Subsidiary Agreement on forest access road and bridge construction for more than 20 different projects across Northern Ontario. The FMSA program is accelerating the development of the forest access road network on Crown and Company Management Units throughout the boreal forest in an effort to increase the volume recovery from mature and over-mature forest areas and to enhance the implementation of modified harvesting systems. An expanded forest access road network will also be of significant benefit to other Ministry programs such as forest fire management, outdoor recreation and mineral exploration. Roads are now planned to take local and tourism needs into consideration.

Employment Bridging for Laid-off Forestry Workers

In February, 1982, in response to the serious unemployment situation in the forest industry, the Minister announced the introduction of a program to provide temporary work in resource management projects for forest workers. Taking advantage of a section of The Unemployment Insurance Act, the program provided provincial and federal funds in addition to the basic unemployment insurance payments for forest workers. Projects under this Accelerated Forest Improvement Program were supported by the Canada Employment and Immigration Commission and the Ontario BILD program. (BILD is an On-



Left: Private woodlot owners can receive advice from MNR experts on woodlot management.





tario Cabinet Committee which consolidates and co-ordinates implementation of the government's economic development strategy.)

As a result, forestry-dependent communities could retain their skilled workers, maintain payrolls, and sustain their communities' social and economic vigor. The program allows forest industry companies to recall laid-off employees for the purpose of undertaking expanded forest management and related resource activities. The companies develop proposals in concert with MNR and, when approved, re-employ a core of these skilled workers.

Three Forest Management Agreements Signed During 1981-82

Development of Forest Management Agreements (FMAs) continued during the year. These agreements provide for the integration of harvesting and regeneration by a company and the undertaking of all silvicultural work--site preparation, regeneration and tending. Silvicultural treatments are paid for by the Ministry, at its cost for equivalent work.

In 1981, three new FMAs were signed. These were for the Spruce River Forest with Abitibi-Price Inc., the Black River Forest with Q.N.S. Paper Company Limited (Ontario Paper Company) and the Nipigon Forest with Domtar Inc. There are now eight FMAs with six companies covering an area of 49,948 square kilometres of productive forest, or 31.2 per cent of the productive forest area under licence to the nine pulp and paper companies operating in Ontario.

A company with an FMA is responsible for preparation of management, operating and annual plans, subject to approval by the Ministry. Both the management and operating plans must undergo a public review. Beginning in 1981, the definition of candidate FMA areas and, in particular, the exclusion of portions of the area because of incompatibility of other uses with forest management, involved public participation and took

place within the context of the Ministry's land use planning program.

Forest Utilization Practices Review Committee

On March 12, 1982, The Honourable Alan W. Pope established a joint committee of industry and government entitled the Forest Utilization Practices Review Committee. Mr. I. D. Bird, General Manager of the Algonquin Forestry Authority, was appointed Chairman. The objective was to assure that all possible efforts will be made to utilize our existing forest resources efficiently. The committee's terms of reference included reviewing the current definitions and classifications of wasteful practices, examining penalties and procedures applicable to inadequate utilization, assessing the impact of utilization practices on wood supply and reviewing definitions, procedures, incentives and penalties of other jurisdictions.

Meetings were held with the Ontario Forest Industries Association, Ontario Lumber Manufacturers' Association, Ministry field staff from both Southern and Northern Ontario and with Ministry staff from head office. A report was prepared and forwarded to the Minister.

Pests Pose Perennial Protection Problems

In 1981, the spruce budworm maintained its long-established reputation as the number one pest of coniferous forests in Ontario, even though there was a general decrease in the gross area of infestation (particularly in the southern half of the province). Over 18 million hectares remained infested, and tree mortality associated with budworm activity continued to increase. Aerial spraying was carried out at a number of locations in Parry Sound, Gogama, Kapuskasing, Hearst, Temagami, Kirkland Lake and Chapleau districts. Bacterial, chemical and viral insecticides were applied to 10,233 hectares of designated commercially operable and high value forests, including spruce plantations and seed production areas, a wildlife management area and a provincial park. The objective and tactics of spraying in seed production areas were changed to include protection of reproductive buds rather than preservation of vegetative growth only. The MNR spray program used federally-approved pesticides and application was done by licenced personnel. All areas to be sprayed were posted and the public was notified in advance through the media.

The advent of the gypsy moth into the Tweed district posed a new threat to the welfare of hardwood forests in Eastern Ontario. About 1,500 hectares of mixed forest were severely infested by this voracious defoliator of a wide range of both broadleaved trees and conifers.

Success in controlling the spread of this pest will require co-ordinated efforts with private and municipal control programs.

On the brighter side, co-operative pro-



Above: From 1972 to 1980, Ontario fuelwood consumption increased from 318,000 full cords annually, to more than 1.1-million cords.

Below: Forestry technicians indentify boundaries of private woodlot.

Far left: Pest control staff examine grids for spruce budworm predator eggs sprayed by helicopter during experimental budworm control program.

Above, left: As spruce budworm moths emerge from larval stage, researcher releases them for use in experimental study.





grams for early detection of the destructive European strain of *Scleroderris* canker indicate this disease is not yet established in Ontario. Concentrated surveys of plantations two hectares or larger having red pine in their composition were conducted in the Eastern Region. Samples collected from suspect trees were cultured at the Great Lakes Forest Research Centre. Annual surveillance will be continued to ensure infection centres are located and remedial measures instituted before widespread tree mortality occurs.

The Ministry also supervised the aerial spraying of herbicides over 10,774 hectares in the province. The purpose of this program is to release young coniferous growing stock from competing vegetation.

New Institute to Focus on Fast-growing Tree Species

During 1981-82, provincial forest research at Maple and its associated field units were reorganized and renamed the Ontario Tree Improvement and Forest Biomass Institute. The Institute will benefit from a five-year budget of $4-million from BILD funds, in addition to funds from within the Ministry's research budget.

Particular emphasis is being placed on the breeding and productivity of fast-growing species. Associated ecological and physiological studies contribute to understanding how these species can best be regenerated and grown. These programs will continue to build on the knowledge gained during over 40 years of research at Maple.

Test Tube Trees

A revolution in tree improvement programs may come about through cell or tissue cultures, in which new plants are developed. Poplar plantlets, for example, can be grown in test tubes from the anthers of the flowers, using special techniques. These plantlets can then in turn be multiplied. At the cellular stage, it may be possible to produce new hybrids with desired characteristics. However, much has to be done to develop the methods that are suitable for each species or clone, and, of paramount importance, to ensure that the plants produced through these techniques will survive and perform well under field conditions.

FMA Agreements Create Need For Increased Seedling Production

With the signing of the first FMAs, an unexpectedly high demand for container seedlings became evident. The most rapid means of expanding production capacity was through the private sector and by mid-winter, 1981-82, six agreements for container seedling production had been completed with private growers in the Northern and North Central Regions. These agreements allowed for a 50 per cent payment of the capital cost as construction began and for a five-year commitment to purchase seedlings. When peak production is under way, these six growers will be producing some 20 million seedlings annually, which is equivalent to the existing capacity of Ministry facilities. Over the next few years, a further expansion is planned for both the private sector and Ministry greenhouse facilities to meet additional FMA and Ministry needs.

Ministry of Energy Funds Several Forest Resource Programs

During 1981-82, the Ministry of Energy and MNR co-operated to enhance our fuelwood program, to promote research in tree-breeding and to explore the energy potential of hybrid poplar clones. The fuelwood enhancement program consists mainly of thinning and stand improvement to furnish volumes of fuelwood and the creation of public access to it. Public auctions have been held to provide local residents with fuelwood supplies. In order to augment our regular program of tree-breeding research, the preparation of seed orchards has been undertaken. Increased growth and yield are the vital long-term objectives of this program. The energy values among fast-growing hybrid poplar clones differ and the Ontario Tree Improvement and Forest Biomass Institute, as part of its research program, is studying the factors that play a role in determining these differences. New hybrids that are ideally suited for use in energy plantations will be produced.

Above: Red pine plantation.

Right: Taking samples for a pollination study. For more than 40 years, forestry research has been under way at Maple, Ont., where the new Ontario Tree Improvement and Forest Biomass Institute is located.

1981-82 Forestry Program Highlights

- More than 17 million cubic metres of timber were harvested from Ontario's Crown lands, yielding stumpage revenues in excess of $42-million.
- Our nurseries produced 86 million trees.
- Under the Forestry Act, over 110,000 hectares of Agreement Forests were managed.
- The Ministry supervised the aerial spraying of herbicides and insecticides over 10,744 hectares in the province.
- By March 31, 1982, eight Forest Management Agreements were in place, covering about 50,000 square kilometres, or 31 per cent of the total area under licence to the pulp and paper companies.
- Through Ministry facilities and private greenhouses under contract, the Ministry in 1981-82 produced 30 million container seedlings plus 72 million bare root seedlings.





Mineral Resources Management

OGS Mapping Program Continues the Search for Mineral Potential

Work continued in 1981-82 on the Ontario Geological Survey's program of examination, study and analysis of the surface and below-surface mineral resources of the province. In summer, 1981, 58 field survey teams (51 the previous year) examined and analysed the land's surface to further our knowledge of where mineral resources occur or may best occur.

As in past years, most of those employed on these summer surveys were university students. In 1981, 133 students furthered their geological education by working on surveys managed by the OGS. Examination of Ontario's Precambrian rocks will be needed for years to come, since only seven per cent of the province has been mapped to modern standards of detailed scale.

Geological surveys produce information for two major user groups. The mineral exploration industry uses this data to assist in its search for metals, construction materials, industrial minerals and energy materials, and land use planners use it as a planning aid.

Detailed summaries of all last year's OGS field surveys are contained in *MP 100, Summary of Field Work, 1981*, which was published in December, 1981.

Mineral Resources Publications Popular Success Last Year

To provide a current view of the geology and of the factors affecting mineral development in Ontario, a number of studies and analytical reports are issued each year by MNR staff. Reports, studies, papers and statistics on minerals and market conditions are produced to maintain up-to-date background information for government, industry and universities.

Below: Forums such as the silica conference of January, 1982, provide government and industry with opportunity to share new ideas.



Left: Every year the Ontario Geological Survey hires students for the survey teams investigating Ontario's mineral potential.

Examination of Ontario's mineral resources and their production in relation to world developments and trends assists in the creation of sound policies, which incorporate necessary technological, environmental and economic factors to maintain the health of our mineral resource sector.

During 1981-82, some 310 publications on the geology and mineral resources of Ontario were published. These include: 45 colored maps; 130 preliminary maps; 17 geophysical maps; 81 studies, circulars, reports, papers; and 37 Open File Reports.

Mineral Policy Background Papers were released in 1981-82 on uranium and gold, as was an econometric and simulation approach to the world markets for copper, aluminum, nickel and zinc. Interest in the econometric and simulation approach resulted in two seminars for industry and government analysts. The publication *Gold*, received favorable book reviews and had considerable popular appeal. Only a few copies remained unsold at year end.

The 338-page *1981 Ontario Mineral Score* was obtained from a laser printer directly linked to our computer. Distributed to companies, governments and other sources interested in mineral statistics, it contains dozens of analyses. Included are: costs of production, geographical analyses of Ontario production from 1975 to 1980, estimates of 1981 production for Ontario and Canada, a graphical anaysis of production and a calculation of Ontario's standing in the world.

Ontario Mineral Exploration Program

The Ontario Mineral Exploration Program (OMEP) continued to provide economic stimulation to encourage mineral exploration. In the 1981-82 fiscal year, 54 OMEP-assisted programs were completed with total exploration expenditures of $7.3-million and eligible expenditures of $5.6-million. This resulted in disbursements of $1.4-million in grants or tax credits. OMEP-designated programs under way represented a total expenditure of $26.2-million and $5.2-million in grants and tax credits last year. During the year, the OMEP regulation was amended to allow a maximum $500,000 grant and/or tax credit for any one designated program. The previous limit was $250,000. It is now also permissable to have a property consisting of non-contiguous claims designated, if they are geologically related.

Mining Tax

The Mining Tax is a tax on profits derived solely from the operation of mining. It is the job of the Mine Assessor to appraise the value of the mine output at the "pit's mouth" in order to assess the tax payable. The tax provides the people of Ontario with a share in the mineral wealth of the province, while providing incentives to mineral producers to make greater financial investments.

In spite of the depressed state of the mining industry, $55-million of mining tax revenue was collected last year. Assessments on mining operations totalled 48, three more than for the previous year. The major change occurring within the Mining Tax Section was the installation of electronic data processing equipment at year end.

Ontario Geological Survey Special Projects

In addition to its regular program of field surveys, the OGS managed several special projects with funds provided by other agencies. These specially funded projects resulted in 23 field survey programs during the year.

Eight projects were carried on under the Southern Ontario Geological Survey (SOGS) Program, which is jointly funded by the Ontario Ministry of Natural Resources and the federal Department of Regional Economic Expansion (DREE) under the Eastern Ontario Subsidiary Agreement.



Eight projects were also funded by the Ontario Ministry of Northern Affairs through the Northern Ontario Geological Survey (NOGS) Program.

Surveys were also undertaken as part of the Kirkland Lake Incentive Program (KLIP), a project equally funded by DREE and the Ontario Ministry of Northern Affairs under the Community and Rural Resource Development Subsidiary Agreement.

Field mapping, funded by the Ontario Ministry of Northern Affairs through the Regional Priority Budget Program, was completed last year for planning areas surrounding four Northern Ontario urban areas. A total of 31 townships were surveyed for aggregate resources.

The last special project undertaken during the summer of 1981 was an investigation of the industrial minerals of the Cargill Carbonatite. This project was funded by the Ontario Ministry of Northern Affairs under the Northern Industrial Minerals Studies (NIMS) Program.





The search for precious metals, especially gold, resulted in more than 81,500 claims being held in good standing in 1981-82. This is the highest number of claims held since the staking rushes associated with the mineral discoveries at Kidd Creek and Sturgeon Lake in the 1960s. Assessment work activity was especially strong--total work submitted to the mining recorders increased 86 per cent to more than 1.6 million days of mineral assessment credit.

Interprovincial Mapping Project

A joint project between the Ontario Ministry of Natural Resources and the ministère de l'Energie et des Resources Québec to prepare a geological map of the Abitibi Subprovince--a significant metal-rich volcanic-sedimentary belt--was undertaken last year. A manuscript map, to be published at a scale of 1:500,000, has been compiled, terminology has been agreed upon, and preparation for printing has begun.

When this co-operatively produced map is published, it will form part of a special report on the Abitibi Subprovince to be published through the Geological Association of Canada. It will also be available separately.

BILD Programs Assist in Several Areas of Mineral Exploration and Development

The Board of Industrial Leadership and Development (BILD) continued implementation of several mineral exploration and research programs.

The first custom gold mill (GOMILL) agreement was signed in March, 1982. Under this agreement, BILD will provide an interest-free forgiveable five-year loan for a gold mill and testing facility at Beardmore to serve the surrounding area as far east as Longlac. Establishment of such GOMILL projects--more are expected to be announced in the coming year--provides a service to mining entrepreneurs who cannot build their own mills because they do not have sufficient capital or volume of proven ore.

Left: MNR provides many services to Ontario's mining industry such as research assistance and the Ontario Mineral Exploration Program (OMEP).

Above: Member of OGS survey team plots exact location of rock outcrop.

Below: After a day spent in the field, survey team member spends evening examining rock samples.



Development of industrial minerals was aided by the initiation in December, 1981, of the Small Rural Mineral Development Program. This program grants up to 25 per cent of approved capital costs for projects involving phosphates, silica, talc, potash feldspar, magnesite, mica, whiting, barite, kaolin, and certain building and ornamental stones.

A silica seminar was organized to stimulate industry to produce more Ontario silica, and background papers were prepared for distribution on the industrial applications and industry status of shale, nepheline syenite, silica, feldspar, and kaolin.

Selected core from exploration drilling is to be stored in core storage libraries funded by BILD and built at various locations across the province. Site investigations were performed at several locations during the year and construction of the first Northern Provincial Drill Core Library should take place soon in the Kirkland Lake-Swastika area. The $500,000 facility, one of several proposed for Northern Ontario, will store and catalogue regional drill core which will be available to mining companies, prospectors and geologists. The aim of the program is to reduce the cost of mineral exploration by providing a permanent record of geological information—which reduces the need to re-explore and re-drill specific areas of geological interest.

In 1981-82, work was started on all three components of the BILD Hydrocarbon Energy Resources Program. This is a program to assess the potential of Ontario's lignite, peat, and oil shale resources and thereby encourage private sector development to improve the province's level of energy self-sufficiency.

Peat was highlighted by a successful international symposium called "Peat—An Awakening Natural Resource" at Thunder Bay in October, 1981, which attracted 250 delegates.

The Moneco report on *Evaluation of the Potential of Peat in Ontario,* published in connection with the symposium, is already in its second printing. The peat inventory program began with mapping of selected areas of Northern Ontario using the satellite-based imagery from the Ontario Centre for Remote Sensing.

A permanent staff geologist was hired to oversee the oil shale studies, and preparation of thickness and structural contour maps of oil shale formations was begun. A drilling program to obtain subsurface samples of potential oil shales was conducted between December, 1981, and March, 1982. Drilling was carried out in the Collingwood, Little Current, Ottawa, Pickering, Toronto, King City, and Shelburne areas.

The Exploration Technology Development Fund was initiated by BILD in 1981 to foster a program of mission oriented research in mineral exploration technology. The fund is intended to encourage the advancement of exploration geophysical and geochemical techniques.

Increase in Assay Determinations in Geoscience Laboratories

The Geoscience Laboratories provide analytical and mineralogical support to the programs of the OGS. Assistance is also offered to prospectors and developers as required by The Mining Act. Fees are charged for outside work according to a schedule which is revised annually to avoid competition with private laboratories.

Below: The Minister of Natural Resources, Alan Pope, tours plant facilities of the first GOMILL agreement signed in March, 1982.

Right: Funded by the BILD program, custom gold milling provides a service to smaller mining companies.



1981-82 Mineral Program Highlights

- Total estimated value of mineral production, to be assessed under The Mining Tax Act, was nearly $4.3-billion and realized a tax revenue of $55-million.
- Under the Ontario Mineral Exploration Program (OMEP), 189 applications were received for a total planned expenditure of $40-million for exploration purposes in the province.
- A total of 106 geoscience reports and 192 geoscience maps were produced by the Ontario Geological Survey.
- The Ontario Geological Survey managed 34 regular field survey projects and 24 field crews on behalf of other agencies.
- Six special joint survey programs funded by MNR in partnership with various other government agencies (such as the Ontario Ministry of Northern Affairs and the Canada Department of Regional Economic Expansion) received $3.3-million last year.
- Ontario produced 37 per cent of all metallic mineral production and 36 per cent of all structural materials in Canada last year.
- Expenditures by the mineral exploration industry for Ontario during the year were an estimated $67-million.

Of the 86 known stable elements, 69 are determined in geological materials at the Geoscience Laboratories. These elements range from major components of rocks and ores (such as silicon and iron) to trace components of rock, soil, water and vegetation samples (such as arsenic and gold).

In addition to providing a wide range of mineralogical and element analyses, scientists in the laboratories continue to develop procedures to improve the quality, range and efficiency of analytical data production. A new method for the determination of selenium in rock was developed. Contributions were also made to several reference material certification programs and quality control studies. The laboratories are equipped with up-to-date analytical instrument systems including simultaneous, multichannel, computer-controlled X-ray fluorescence and argon-plasma optical-emission spectrometers.

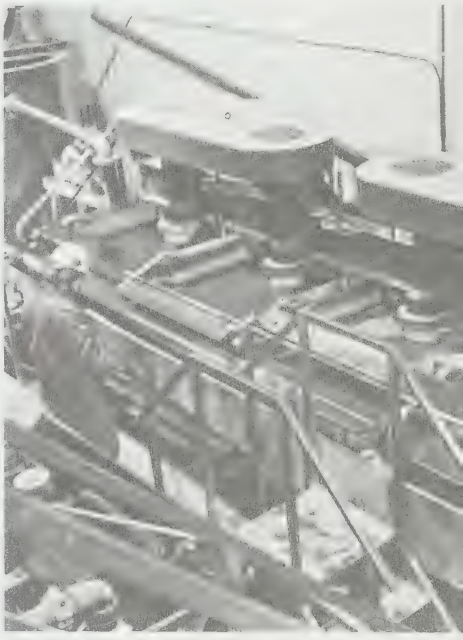
Output rose to 162,000 determinations, an increase of seven per cent over the previous year. Most significant was the increase in assay work which rose from 8,000 to 17,000 determinations.

Industrial Minerals

Various changes were made during the year to the proposed Aggregates Act--legislation to strengthen the regulation of the operation and rehabilitation of pits and quarries. The proposed Aggregates Act is expected to receive legislative approval during 1983. Much effort was also directed to preparation of a draft Mineral Aggregate Resource Planning Policy. Such a policy will provide a framework for municipal planning of aggregate resources and will complement The Aggregates Act.

A background paper, *Ontario Industrial Minerals,* was prepared during the year for publication in April, 1982, to provide an overview of the existing production and potential of industrial minerals in Ontario. A study of the short-term demand for mineral aggregates in Ontario was completed, and a medium and long term demand forecast study begun. Also during the year, 21 additional Aggregate Resources Inventory Papers (ARIP) were published by the Ontario Geological Survey.

During the summer and fall of 1981, eight tours of pits and quarries were conducted jointly by MNR and the Association of Counties and Regions of Ontario for municipal representatives. These tours were presented to inform and promote discussion with local politicans and municipal planners about mutual concerns and solutions related to pits and quarries and planning for mineral aggregate resources.



Geoscience Research Grants

Since 1978, the Geoscience Research Grant Program of the OGS has been awarding funds to universities for research projects that will be of interest and aid to mineral explorationists and developers. In 1981, grants totalling $418,289 were awarded to nine universities for 21 research projects. These grants support projects of up to three years' duration. Papers summarizing the research performed, along with various OGS papers, are presented each December at the annual Geoscience Research Seminar in Toronto.



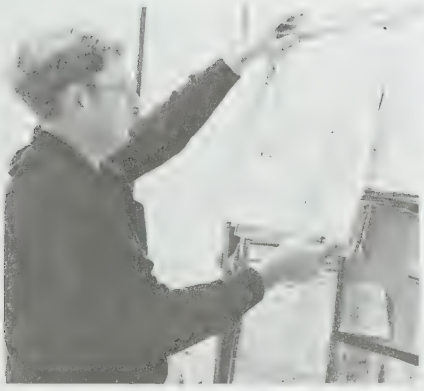
Aviation and Fire Management

The 1981 Fire Season: We Were Prepared

As a result of the extensive losses caused by the 1980 fires, an additional $4.5-million was allocated to forest protection for the 1981 fire season. The additional funds were applied to the fire control systems that contribute to reducing fire incidence, early detection and effective and sustained attack. This enlarged fire suppression capability made it possible to hire an additional 30 unit crews for a total of 175 and to extend contracts. It was also possible to increase the amount of fire suppression equipment across Northern Ontario.

Heavy waterbombing capability was increased by adding four Canso aircraft (making a total of nine), and including bird-dog capabilities. Helitack capabilities were augmented with extended contracts and the addition of seven helicopters. As well, three De Havilland Twin Otter waterbombers were purchased and made ready for the 1981 season. The provincial waterbombing fleet now consists of five Twin Otters, 15 Standard Otters and 14 Turbo Beavers. The aircraft were dispatched throughout the province as soon as ice conditions improved enough to allow access to inland lakes. During periods of low fire incidence throughout the season, these aircraft carried out other ministry and government projects. The Ministry operated two King Air, one Twin Otter and one Turbo Beaver for government business purposes in 1981-82.

A fire load analysis for the spring fire season indicated an over-winter precipitation distribution of 40 to 60 per cent of normal, west of Lake Nipigon. This information, coupled with predictions from the federal Atmospheric Environment Service, indicated that preparedness should be geared to an early fire season across the province. It looked much like the 1980 season, with a high fire hazard building in Northwestern Ontario in late April. The results were as ex-





Left: Metres and metres of hose must be inspected, cleaned and dried out on a tower following firefighting use.

Above: Topographical and weather information is vital in planning how a fire is to be fought.

Right: All fire unit crews receive intensive training. Safety techniques receive high priority during instruction.



pected. Forest fire activity began in the Northwest and North Central regions with fire behavior corresponding to drought conditions. However, being prepared enabled fire management staff to cope with a dangerous situation similar to the 1980 one, and yet maintain a relatively low area of burn.

Following a brief period of relief during June, dry warm weather persisted in the four northern regions through to late August. The 1981 forest fire season resulted in 1,656 fires which burned a total of 179,473 hectares (compared to 1,779 fires and 558,468 hectares last year). Within the area of intensive protection, the burned area was held to approximately 50,587 hectares, compared to 554,583 hectares in 1980.

Ontario's ever-increasing use of helicopters for fire management work has brought about a need for clearer guidelines on acquisition, control and utilization. As a result, a Helicopter Administration, Management and Operations Manual has been developed for the 1982 fire season. As well, Ontario is chairing a national sub-committee on Helicopter Safety.

Fire Prevention Receives Added Attention

A major thrust to upgrade the visibility of Ontario's fire prevention program was initiated in the spring of 1981. This is a continuation of the development of a high-profile, effective prevention campaign.

As well, funds were made available for the hiring of seasonal prevention technicians to deliver and maintain prevention activities in each region.

A Provincial Prevention Committee made up of district, regional and provincial representatives was formed to develop a standard prevention planning manual, review and approve new prevention material and to develop an evaluation process for the present prevention program.

A major fire prevention media campaign was carried out between May and August of 1981. It was designed to go beyond the normal media program and to assist in preparedness efforts for the 1981 fire season which was, at that point, expected to be as devastating as the 1980 season.

Great Lakes Forest Research Centre: Fire Research Co-operative Projects

Ontario continued to support Canadian Forestry Service research programs in prescribed burning and fire behavior. Last year, two technicians were hired under the joint federal-provincial DREE program to assist in project work.



Left: Refuelling during a fire flap. Helicopters are used in initial attack.

Right: MNR fire crew member checks pack.

Below: Checking a print-out from infra-red equipment which pinpoints the location of fire edge and hot spots.





Fire Management Improvement Project

The Fire Management Improvement Project was well under way in 1981-82. Policy Statements of Intent and Direction were developed and circulated for review and approval. A Forest Values project was established to develop a standard value appraisal system for use in Fire Management Planning. Fire Control Organization concepts were stated and discussed.

A trial of some of the concepts was undertaken in 1982. Staff visited Quebec, Alberta, the Northwest Territories and British Columbia to study other approaches to fire management. In particular, legislation, policy, organization and co-operative involvement were discussed. These visits were extremely useful and will be continued with other provinces. A fire management planning system for use at all levels of the organization is being prepared.

New Personnel Manual

A Forest Fire Personnel Standards Manual listing the experience and training requirements of over 40 different fire operation positions was developed prior to the 1981 fire season. This manual is currently being used to roster all forest fire personnel in Ontario. Information gained will be used to set establishment levels for all positions and as a guide for the scheduling and development of training programs.

Co-operative Fire Control with Industry

A major initiative in 1981 was increased involvement of the forest industry in fire control. Concern generated within the industry by 1980 losses resulted in a request through the Ontario Forest Industry Association for such involvement.

A group of industry leaders and senior MNR staff then developed a strategy which led to several new policies. Among these was involvement of forest industry workers in initial and sustained attack, a program to train industry people in fire control methods, a modified pay scale for trained industry firefighters, and a plan for increased and improved involvement beyond 1981. Industry involvement in 1981 was excellent, with companies committing major manpower and equipment resources to several fires.

Communications Improvements

A major project for 1981 was the development of a specialized kit comprising radio units which operate on a group of VHF (low band) frequencies that are close to, but separated from, the conventional radio frequencies used in Ontario's radio network. The kit allows a fire radio system to set up on these frequencies in such a manner that up to five divisions will each have a "private" channel on which to operate, interference free. A sixth channel is reserved for use to access an "on fire repeater unit" which will allow communications be-

tween fireline and base camp when necessary.

Lightning Locator Again Provides Pertinent Data

The LLP lightning locator in Northwestern Ontario once again proved useful during the 1981 fire season. Maps showing lightning strikes were produced daily and used experimentally by fire operations staff. A number of new uses were implemented to enhance initial attack capabilities including detection routing changes and resource positioning. The system operated smoothly last year with few problems.

During the 1982 fire season, the lightning locator system became fully integrated into the Northwest Region daily fire operations. Some new software changes will be tested. The system is expanding eastward, to cover the North Central Region.

Ontario Assists in Fire Management Elsewhere

Ontario was able to provide some assistance to other provinces in 1981. This included sending:

- a project Fire Communications Kit together with a team of technicians to Alberta's Swan Hills fire in mid-August;
- 50 pumps to British Columbia in mid-August;
- four Ontario Provincial Fire Teams to Alberta in mid-September;
- six 11-man suppression crews and some suppression equipment to Alberta following the fire teams; and
- a supply of aerial ignition "ping-pong balls" to New Brunswick.



Left: Trees burnt out by the huge Thunder Bay 46 fire in 1980 provide a grim monument.

Above: Helicopter brings personnel and equipment in to edge of fire.

1981-82 Aviation and Fire Management Program Highlights

- A total of 1,656 forest fires burned 179,473 hectares of Ontario forest land.
- An additional 30 unit crews were added to the normal complement of 145 crews.
- In 1981, seven fixed-wing aircraft and seven helicopters were added to our aircraft complement. Most of these were contracted or leased.



Outdoor Recreation Management

Parks and Recreational Areas

Promoting our Parks

In May of 1981, the Ministry of Natural Resources launched a tourism marketing campaign for Ontario's 132 provincial parks and recreational areas. Utilizing a combination of advertising, improved customer services and several new consumer-oriented publications, the Ministry promoted parks as desirable vacation areas where a variety of outdoor activities could be pursued.

Provincial parks attract between five and six million visitors each year, but most parks are by no means overused.

Radio spots on the majority of Ontario stations and newspaper ads in dailies and weeklies highlighted the natural attractions and recreational experiences awaiting the prospective park visitor.

Despite poor weather in the province during most of the month of August, Ontario's provincial parks realized an increase of 5.4 per cent in attendance and 4.2 per cent in revenues.

To ensure that information demonstrating the diversity of parks opportunities was readily available to visitors, a series of new publications was produced. Outstanding among these publications was the parks' flagship brochure, *Ontario Provincial Parks – Yours to Discover*, which was distributed throughout the province. Another important publication was *Canoe Routes of Ontario*, a guide to the canoeing resources of the province, which was distributed by a major Canadian publisher and has attained a high volume of sales throughout North America.



Three major film productions were also completed and released during 1981. *Natural Journey* shows the range of recreation offerings and landscapes in and around provincial parks. It has been translated into French, German and Dutch and has gone into worldwide distribution.

Snow, a short film promoting winter activities in provincial parks, won first prize in the promotional film category at the Bijou Awards Ceremony sponsored by the Academy of Canadian Cinema and the Canadian Film and Television Association.

Camping Ontario was produced collectively by MNR, Ontario Private Campground Association, Parks Canada, the Ministry of Tourism and Recreation, and many other private sector groups involved in the camping industry. The film will be used to promote all facets of the camping industry in Ontario.

Film distribution was enhanced with the production of a promotional poster. In addition, a complete set of parks and recreational areas films was deposited in each of the 15 Ontario Regional Library Systems, enabling our films to be available in almost all cities and towns throughout the province.

Quetico Provincial Park Master Plan Review

The master plan for Quetico Provincial Park received Ministerial approval in September, 1977. Through the approval of a master plan the government expresses its intentions, in the form of policies, as to the manner in which a park will be planned, developed and managed over a period of time. The periodic review of a master plan is an important stage in the park planning process as it provides an opportunity not only to evaluate progress made, but also to ensure that the plan remains current and relevant.

During the summer of 1981, the Ministry of Natural Resources initiated the first review of the Quetico Provincial Park Master Plan. Ministry staff were assisted in this task by the Ontario Provincial Parks Council, a citizen's advisory committee to the Minister of Natural Resources.

Left: During a nature course, students take a closer look at pond life.

Below, left: MNR naturalist tells the twig's story during a winter hike.

Below, right: Parks offer visitors scenic experiences in all seasons.



The Parks Council and Ministry staff travelled to Atikokan, Fort Frances, Thunder Bay and Toronto during August, September and October to meet with members of the public interested in the Quetico review. An informal open house, followed by a public meeting, was held in each location.

The open house segments were hosted by Ministry staff who answered specific questions concerning the park, and provided any additional information requested by those in attendance. Displays were also set up to provide pertinent information related to the review of the park master plan. The public meetings, which followed on the same evenings, were sponsored by the Parks Council. During the meetings the Council re-

ceived and recorded written and verbal submissions on any aspect of the master plan and the management of Quetico. In addition to participating in the open house or meetings, interested members of the public were also invited to forward comments expressing their views directly to the Chairman of the Parks Council.

In total, the Council received some 1,400 submissions which identified some 94 park management issues. On this basis, a series of recommendations was formulated and forwarded to the Minister of Natural Resources for his consideration. The Minister's response will be used in the preparation of a revised master plan.

The Task Force on Parks System Planning

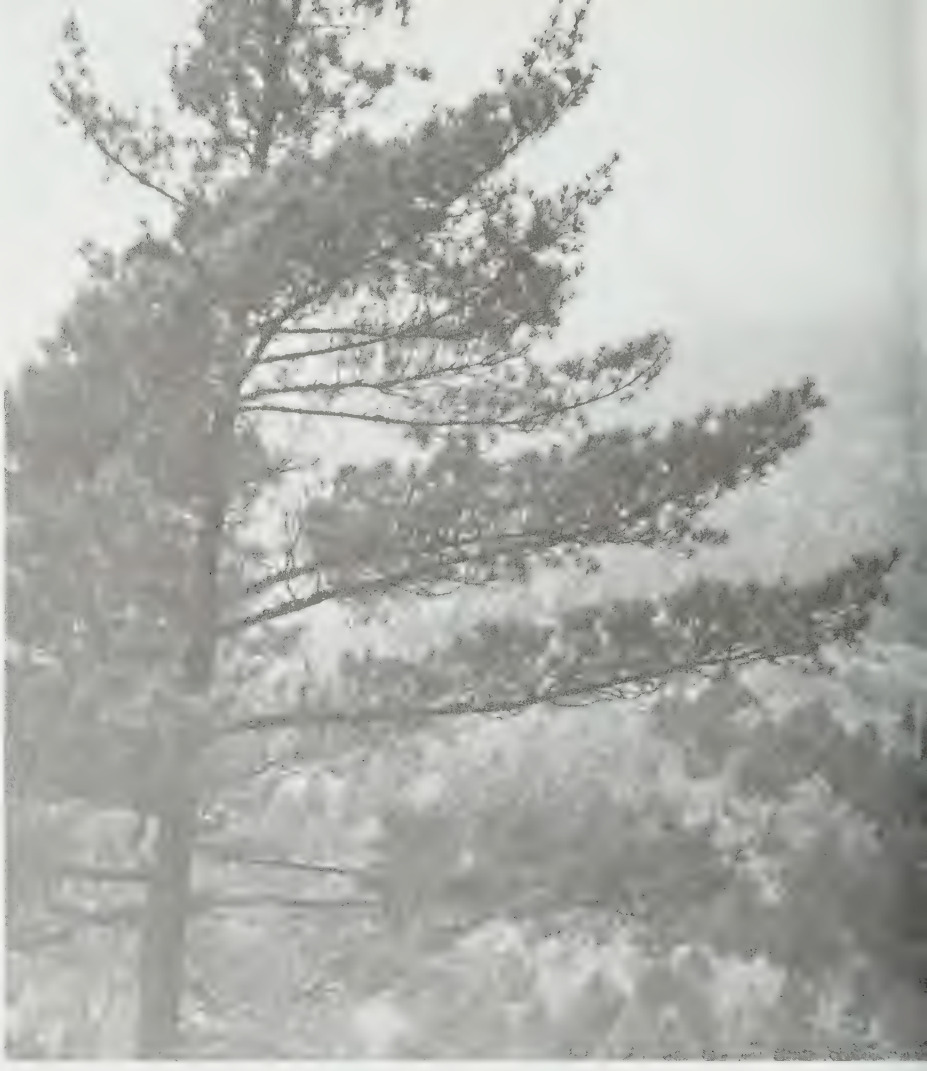
In order to synchronize parks system planning and land use planning, the Assistant Deputy Ministers for Northern and Southern Ontario requested in March, 1981, that a Task Force on parks system planning be established.

Between April and July 1981, the task force held meetings with representatives of both the parks and lands programs across the province. These meetings helped to identify data from the regional parks system planning process required for input to the task force report.

The report was completed in September, 1981, and presented to senior management in early October. The Minister tabled the report in the legislature on March 12, 1982. At the same time, he introduced other parks and land use planning documents including a "Policy for Interim Uses in Candidate Parks".

Copies of the report have been widely distributed and are also available in all district and regional offices, as well as in university libraries and major public libraries across the province.

Of more general interest, a summary booklet entitled *Background Information on Land Use Planning and Parks System Planning in Ontario,* was also released by the Minister and has been given wide public circulation.



Parks' Market Research

Market research for the provincial parks has become a significant area of emphasis in recent years. During the past year, projects have been undertaken to develop a research strategy for the marketing emphasis, to establish initial market segmentations and to evaluate promotional activities. Collection and analysis of market-related information is an important continuing responsibility.



Aquatic Resources Management in Provincial Parks

The quality of the waters in our provincial parks and the protection of internal parks aquatic ecosystems are important to the health and safety both of parks users and natural inhabitants. During 1981-82, MNR completed phase one of a study to develop methods of assessing both water quality and the aquatic ecosystems. These assessments will assist in the formation of phase two of this exercise, which includes policy and guidelines for planning and management of these important park resources.

Wildlife Management Policy

A wildlife management policy for provincial parks was approved during 1981-

Above: Breathtaking vistas like this draw millions of campers and visitors to Ontario provincial parks annually.

Left: Canoeing is one of the most popular pastimes on Ontario lakes and rivers.

Right: Editing MNR's Bijou award winning film, Natural Journey.

82 by the Ministry. The policy provides guidelines for the preparation of wildlife management plans which will be developed utilizing a field team management approach. Each plan will be oriented to the particular park to provide wildlife-based recreational opportunities consistent with the objectives of that park. Public safety, health of indigenous wildlife populations and adequate wildlife habitat will be among the considerations in the planning.

Volunteer Program Established

A pioneer policy formally establishing a volunteer program for provincial parks was approved in December, 1981. The policy will guide the establishment of a volunteer program with benefits for both the volunteers and the Ministry. Volunteers derive satisfaction and experience from contributing to the achievement of the parks' program objectives and their efforts will complement the work carried out by MNR staff. Volunteer activities will include diver orientation and safety at Fathom Five Provincial Park, canoeing instruction at several other parks and other skill or survival oriented assistance.

Municipal Parks Assisted During Year

During 1981-82, 37 municipalities throughout the province received grants in excess of $600,000 under The Parks Assistance Act to establish new parks or further develop existing ones. More specifically, the grants--which are matched by the municipalities--were used to provide beach areas, campgrounds, boating facilities and other improvements to enhance local park facilities.

During the year, 14 new parks were established under the Act bringing the total number of approved parks to some 240 since inception of the program in the early 1960s.

Customer Service Training for Parks Staff

As part of the development of a marketing and tourism initiative, most provincial park managers received training last year to enable them to function as hospitality course instructors within their respective regions. A provincial course was held at the Frost Centre to initiate the co-ordinated training effort and to develop specific guidelines for passing on customer relations training skills to front-line staff within the parks.



1981-82 Provincial Parks Program Highlights

- Michipicoten historical class provincial park (on Lake Superior) was added to the system bringing the total to 132 provincial parks.
- A total of 40,000 campsite reservations were processed.
- A 5.4 per cent increase in park attendance was experienced.
- To maintain the high level of health and safety in provincial parks, 30 park sanitation audits and six park sanitation seminars were conducted.
- The Task Force on Parks System Planning proposed more than 240 candidate parks during MNR's District Land Use Planning program.



Left: Bottle-feeding moose calves at the Wildlife Research Station in Algonquin Park.

Wildlife

Wetland Discussion Paper Receives Public Response

Wetlands are a unique natural resource, storing and purifying water, helping control floods, providing timber products and wild rice, several game species and opportunities for outdoor recreation. In September, 1981, a discussion paper, *Towards a Wetland Policy for Ontario* was released. The paper was produced to solicit opinions and ideas concerning wetlands and their management. About 450 letters were received, and this public response provided many ideas for wetland management.

Emphasis on Small Game and Waterfowl Management

Grouse, bobwhite quail, Hungarian partridge, pheasant, woodcock, squirrel, rabbit and hare are an important part of Ontario's wildlife resource. In addition to hunting, small game species provide many outdoor viewing opportunities. Approximately 60 per cent of all recreational hunting and hunter expenditures are in the small game category, and account for about $40-million annually.

In 1981-82, policy development for small game continued and will be reflected in the province's strategic land use plans. Small game management activities last year included population surveys, habitat management, enforcement, user surveys and operation of provincial wildlife management areas. Development of an extension program to increase public involvement in wildlife management activities was initiated and is expected to benefit small game populations.

Also in 1981-82, we continued to develop waterfowl management strategies with the federal government, and established our first agreement with Ducks Unlimited to develop the waterfowl production capabilities of Hullett Wildlife Management Area.

Reintroduction of Peregrine Falcons Major Effort in Nongame Program

In 1981-82, peregrine falcon releases were undertaken for the fifth consecutive year in Algonquin Park. The falcons were also released for the first time in downtown Toronto, from the Ministry's Whitney Block headquarters. A total of 16 birds (obtained from the Canadian Wildlife Service) were released in both projects, bringing to 52 the number of peregrines released since 1977. At that time, the peregrine, which is protected under Ontario's Endangered Species Act, was considered to be no longer extant in Ontario. It is hoped that the reintroductions will help to establish a breeding population. A spring survey for peregrines was undertaken in Algonquin Park in 1981, in co-operation with the Federation of Ontario Naturalists and the Elsa Wild Animal Appeal of Canada. It was encouraging to note that a banded peregrine, released in a previous year, was sighted.

Surveys and the preparation of status reports are components of the nongame program's work. These were completed in 1981 for a variety of species. The Ministry continued to co-operate with the Committee on the Status of Endangered Wildlife in Canada which is identifying rare, threatened and endangered Canadian species.

Update on Deer, Moose and Black Bear Programs; Trapper's Course

Ontario's central deer herd continued to increase under the new deer management program, even through the relatively severe 1981-82 winter. Selective harvest continued to have a pronounced effect in providing for an increase in prewinter deer numbers. The new supplementary feeding program, much of it conducted by the public, pulled many yards successfully through a period of severe cold and deep snow. Meanwhile, the moose harvest remained relatively unchanged as the public continued to discuss and debate proposed changes in the hunt.

Black bears responded to a poor wild berry crop by becoming nuisances to farmers and city dwellers, and Ministry staff dealt with hundreds of nuisance bear complaints.

A major development in fur management was the final stage of implementation of the Fur Harvest, Fur Management and Conservation Course. All novice trappers were required, as of July 1, 1981, to attend this course being offered in community colleges. These trappers of the future will be better versed in humane methods of trapping, safety and survival on the trapline, and care of the fur resource and its products. Experienced trappers are also encouraged to take the course to improve their skills.

Wildlife Extension Activities Cover Wide Range

Working in co-operation with the Canadian Wildlife Federation, the Wildlife Extension staff produced a button and T-shirt transfer for use during National Wildlife Week last year. The Wildlife Series for schoolchildren and production of a wildlife professional development day program for teachers were initiated during the year.

Several popular wildlife publications were revised, and some brochures on nuisance animals produced. During the year, first drafts of papers on private land management, information and education policies and program strategies were prepared.

May be Possible to Increase Wild Rice Production in Future

Wild rice is distributed throughout much of Ontario, but the major stands are in the northwest, particularly on and around Lake of the Woods. Production varies greatly from year to year, primar-



ily because of annual changes in water levels. Production in 1981-82 was average.

A co-operative study (Treaty No. 3, Department of Indian and Northern Affairs and the Ministry of Natural Resources) under the direction of the Indian Commission of Ontario was undertaken during 1981-82 to assess the influence of water levels and other factors on the production of wild rice in Lake of the Woods, Rainy Lake and associated water bodies. Findings of this report are now under consideration. The moratorium on the issuance of additional harvesting licences to non-native people remained in effect in 1981-82 to give native people a further opportunity to improve their position in the industry.

The Ministry would like to see greater production of wild rice to increase economic benefits to the residents of Ontario. A higher level of production could be obtained through use of mechanical harvesters, control of water levels (where feasible) and the cultivation of rice in areas where it does not now occur.

The Ministry has developed a series of policies for the development and management of the wild rice industry in Ontario.

New Design Lab Helps in Tuning in on Animals

The need to study free-ranging wildlife necessitated the research and development of electronic telemetry devices. An electronics design laboratory has been established to this end, and in 1981 several products were completed. Radio transmitters that relay location, activity, temperature and mortality of the animal have been considerably reduced in size. High reliability is stressed. Comfort of the collars for animals is achieved through gentle contours, and conformal fitting. Synthesized frequency scanning receivers are used for automatic searching of animals.

Prototypes of a remote recapture collar were built and tested in 1981. Tests on live animals were conducted in 1982.

Miniature ultrasonic fish transmitters were developed and placed on fish in the spring of 1982. These transmitters will transmit 800 metres for 10 to 14 days.

Above: Young peregrine falcon is one of 16 released in 1981-82 re-establishment program.

Above, right: Testing a humane trap--a foot-snare type developed by MNR staff.

Below, right: MNR conducts courses to assist trappers to improve their skills.

Results of Rabies Vaccine Wildlife Research Program Encouraging

During 1981, over 1,833 people were treated after exposure to rabies in Ontario. Once again, Southern Ontario had the highest incidence in Canada: a reported 1,736 rabies cases in wildlife and domestic animals. Since foxes and skunks are the primary source of rabies infection, the Rabies Research Program is aiming at control in these species with an oral vaccine. Development and testing of a vaccine contained in miniature capsules placed in a hamburger meatball was the major endeavor last year. Results were very encouraging: 30 to 50 per cent of foxes developed immunity during lab trials. However, this percentage must be raised before a large-scale field trail is launched.

The method developed to deliver the vaccine appears effective. During 1981-82, results from the large bait tests near Wingham and Owen Sound showed that our aerial bait delivery system was capable of reaching over 70 per cent of foxes and 50 per cent of skunks in both open farmland and heavily forested areas. Although no vaccine was hidden in the meat, the baits did contain tetracycline which was later traced in the animal's teeth if a bait was eaten. Because of the progress in 1981-82, Ministry staff planned to conduct a pilot field trial in the fall of 1982 to test a rabies vaccine using wild foxes they will equip with radio devices.

New Research on Ticks as Threat to Moose

Although ticks are not normally a serious health problem to their wildlife hosts, the unusually large numbers of ticks on moose (up to 80,000 ticks on one animal) has led to research to see if winter ticks endanger the life of a moose.

Tick-infested moose react by grooming and rubbing their winter hair. It is suspected that bare patches observed on dead moose in the wild are the result of excessive grooming and rubbing stimulated by tick irritation. Illness or death may occur from an excessive loss of energy through the poorly insulated bare patches.

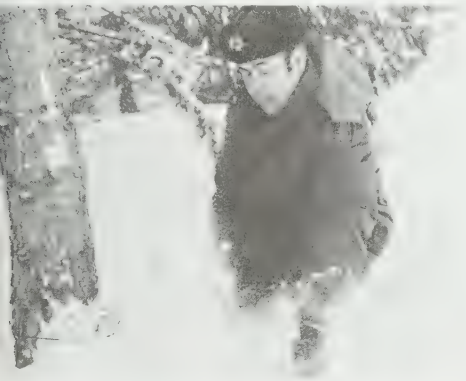
Present studies are directed to determine if this is true and, if so, to recommend management practices to avoid the problem.

MNR Team Studies Ducks in Northern Ontario

Much of the effort of the Upland Game

and Waterfowl Unit in the past few years has been devoted to studies of the breeding biology of goldeneye ducks.

In 1981, this work was broadened to include comparisons with other species of ducks breeding in Northern Ontario. In particular, much effort has been devoted to understanding the breeding strategies of ducks in the Elk Lake/Cochrane areas. Specimens were collected to examine weight changes through the spring and early summer, the fat content of laying



ducks, the speed of yolk development in the ovaries, and the quality of the waters on which the birds nest.

The productivity studies of Canada geese in the Hudson Bay Lowlands were refined with the inclusion of snow cover studies. It was found that deep snow along the Hudson Bay coastal area likely delayed nesting and reduced production. This was confirmed with photographic surveys in July, 1981, when the proportion of goslings in the flocks was found to be well below those of 1979 and 1980.

Learning More About White-Tailed Deer

The white-tailed deer unit was concerned with three main topics of research in 1981: evaluation of harvest, analysis of snow cover and implementation of vegetation surveys.

Hunting activities and kill were monitored on an area representative of Eastern Ontario deer range in an attempt to determine the effects of the selective harvest system. Data collected for the past 20 years from the same 235 kilometre area provided a yardstick for comparison. Results of the 1980 hunt were analysed to provide a basic format for future studies.

Snow cover records from a province-wide network of snow stations were examined weekly. Efforts were begun to computerize existing records for rapid evaluation, storage and retrieval of snow data. This new system should provide managers with better information with which to assess current snow cover and its effect on deer.

Field investigations to study the effects of deer on woody vegetation were only partially completed due to inclement weather during the survey periods. Several logging operations were inspected in an attempt to determine the long and short term benefits to wildlife. Deer activity was observed in the experimentally cut cedar swamps and a management report was produced for distribution within the Ministry.

1981-82 Wildlife Program Highlights

- The 1981 fur harvest amounted to 980,127 pelts with a total value of $18,965,648.
- MNR's hunter education program trained 39,625 students in 1981.
- In 1981-82, 16 peregrine falcons were released, bringing the total released since 1977 to 52.





Fisheries

Reconstructed Hill's Lake Station will be Major Fish Supplier

Hill's Lake Fish Culture Station at Kirkland Lake was reconstructed and completed in 1981. Almost one million eggs, mostly brook trout, were introduced in December. The station was designed to be a major brood stock station for the province, and will supply brook trout and lake trout as well as first generation splake. Work was initiated on the design of a new fish culture substation near North Bay (eight kilometres from the existing North Bay station) and planning begun for the reconstruction of the Tarentorous Fish Culture Station at Sault Ste. Marie. A site was purchased, in 1981, for the development of a Fish Culture Station at Harwood near Rice Lake. Identification was carried out through aerial thermography followed by ground proofing. This hatchery should support 750,000 salmonids annually, primarily for planting in Lake Ontario.

Splake Success Leads to Increased Stocking Program

Several selected inland lakes will receive future plantings of first generation splake. This species demonstrates better survival and growth than either lake trout or brook trout in similar situations. The splake stocking is in addition to the continuation of lake trout backcross stocking in Lake Huron.

Brood Stocks to be Developed for Great Lakes

An emphasis will be placed on the use of discrete stocks for rehabilitation stocking, especially in the Great Lakes. Rather than relying on continued wild egg collections, appropriate brood stocks will be developed accordingly.

New Stocking Assessment Program

Strategy and guidelines for a provincial fish stocking assessment program were in the process of being developed in 1981-82. Once in use, this program will generate the necessary information to make more efficient use of our hatchery production in the future.

Native Brown Trout Doing Well at Hatchery

In fall, 1981, 290,000 native brown trout eggs were collected from the Ganaraska River as were eggs from the Sydenham River. The eggs are currently at Codrington Fish Culture Station and are growing well. They will be available for stocking as yearlings in the spring of 1983. Some of the fish will be returned to the Sydenham River. A pathogen-free brood stock of brown trout is being developed and the resulting fish will be



Above: Lake Erie fishermen carefully winch in their seine nets.

Left: Ontario has the largest freshwater commercial fish catch in Canada. Lake Erie provides 75 per cent of the Ontario annual catch.



held at Codrington. Modifications were begun last year to provide for egg isolation and brood stock holding facilities at Codrington.

Commercial Fisheries

Ontario has the largest freshwater commercial fish catch in Canada, totalling nearly 60 million pounds with an estimated ex-vessel value of $25-million. Commercial fishing is carried out primarily in the Great Lakes, but a substantial amount is also carried out in Northwestern Ontario. Lake Erie is the greatest producer of freshwater fish, with over 75 per cent of Ontario's catch: 30 million pounds of smelt; eight million pounds of yellow perch; and approximately two million pounds each of yellow pickerel and white bass.

In co-operation with the Ontario Council of Commercial Fisherman, the Ministry negotiated a new administrative system for the commercial fishing industry in 1981-82.

The co-operation between the industry and government was encouraging, and it is hoped that there is now a basis for a new approach to commercial fishing.

Ontario's baitfish industry produced a record 14 million dozen baitfish worth an estimated $5-million at the wholesale level last year. The demand by anglers and the export market in the United States are factors in the expansion of this industry, even though the number of bait fish harvesters has remained relatively constant.

Community Fisheries Program

The Minister announced during 1981-82 that the Fisheries Branch would embark upon a Community Fisheries Involvement Program. This new program is being undertaken with great enthusiasm, and will get the public directly involved in fisheries management projects. For example, a great deal could be done on habitat rehabilitation and enhancement activities such as a stream bank stabilization, and production of streamside hatcheries and rearing stations. Negotiations were initiated with such groups as the Bluewater Anglers Associations and the Ontario Steelhead and Salmon Fishermen, and the latter are very interested in rainbow trout rehabilitation and enhancement programs. The Bluewater Anglers Association in Sarnia is also interested in increased stocking of rainbow trout, and is establishing its own hatchery with aid and advice from the Ministry. Strict controls, of course, are necessary to avoid community conflicts with the Ministry's fisheries management programs. Pro-



Top: MNR researcher surfaces after checking out lake trout spawning beds in Lake Ontario.

Above: Refurbished Hill's Lake Fish Culture Station at Kirkland Lake will soon be a major supplier of brood stock.

jects proposed must have a high probability of success and fish stocks must be free of disease.

Symposium Held on Fish Stocks

One good way of bringing together all the know-how available to deal with fisheries problems is to invite the world's experts to join in a workshop discussion. During the past year, Ministry scientists have been busy writing up their many contributions to just such an international symposium convened September, 1980 at Alliston, Ontario, by the Great Lakes Fishery Commission to consider how important the stock concept is to fishery management. It showed conclusively that fish populations *are* comprised of many stocks, each with its own, often inherited, characteristics. For some species, each stock must be separately managed for best results. Enough useful information on how to recognize stocks and what to do about them was exchanged between scientists from Canada, the U.S.A., Great Britain, Russia and Sweden to fill a large volume of the *Canadian Journal of Fisheries and Aquatic Sciences*. Judging by requests from all over North America for copies of the dozen or so papers MNR staff contributed (about a quarter of the total), this will prove to be a milestone in the evolution of fisheries management.

The Electrofishing Boat

In 1981, the Ministry successfully introduced a new weapon to its arsenal for sampling fish populations. A sophisticated 18-foot aluminum boat loaded with electrical gear capable of attracting and stunning fish of all sizes in most provincial waters was successfully field tested in both Northern and Southern Ontario. It gives Ministry biologists a much needed tool for accurately censusing small fish which normally escape conventional methods, and will help in stock assessments, mark and recapture studies, environmental impact assessments and similar work.

1981-82 Fisheries Program Highlights

- Commercial fishermen harvested $31.8-million worth during 1981, an increase of $8.2-million over last year.
- MNR fish hatcheries produced 6,150,000 fish this year and stocked 2,680,666 fish into the Great Lakes.
- Resident and non-resident anglers caught and retained more than 97 million fish.
- To date 3,100 water samples from 1,900 sites have been analysed to determine ability to buffer acid rain.
- In 1981-82, Hill's Lake Fish Culture Station was reconstructed at a cost of approximately $5-million.



Fish in net about to be tagged and released to provide information for fish study.

MNR/MOE Acid Rain Program

The year 1981-82 was marked by rapid development of detailed plans to coordinate the many acid rain programs of the Ministries of Environment and Natural Resources. Both have major concerns about the effects of acid and other airborne contaminants on Ontario's waters and their fish resources. Both have worked intensively on particular aspects of the problem--Environment to document effects on water chemistry and the lower forms of life, and MNR to assess effects on fisheries. Intensive discussion and analysis of the problem by a technical advisory group (the Aquatic Effects Working Group of the Acidic Precipitation in Ontario Study), indicated that the programs would be increasingly integrated beginning in 1982.



Administration

MNR Prepares For the Office of the Future

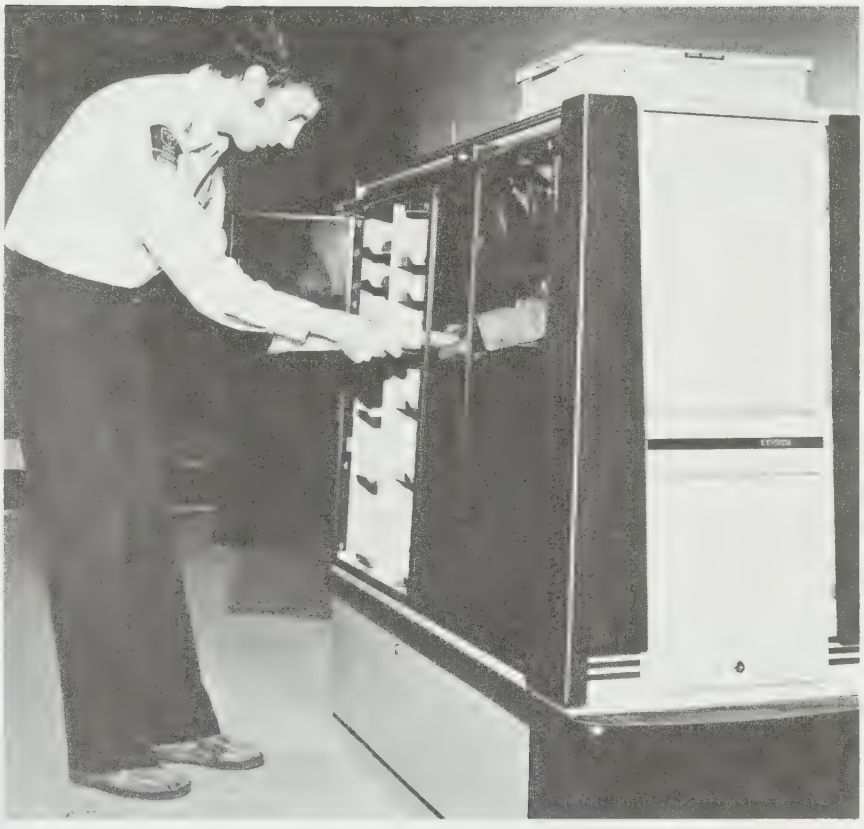
In 1981-82, the Administrative Technology Steering Committee and the Administration Division awarded a project to Trigon Systems Inc. for an in-depth evaluation of the feasibility of introducing integrated office systems into the Ministry. The project will be both a study of the existing office systems and a pilot for the introduction of office automation. Experience gained from the pilot project will assist in the planning for introduction of office automation on a phased basis within the Ministry.

Regional Word Processor Installed in Cochrane as Pilot

Following studies to ascertain the potential of introducing new office technology into field offices, a word processor was installed in the Cochrane office last fall. The equipment processes internal documents and has the potential to electronically transmit to, and receive documents from, a word processor in Main Office. When the project is evaluated, and if it is shown to improve local document preparation and information exchange between field and main office, the introduction of similar equipment in other field offices will be encouraged.

Main Office Mailmobile Service Saves $20,000 Annually

Following the resignations of three mail clerks and a messenger early in 1981, the Ministry decided on a trial run with an automated mail service in Whitney Block. In February, 1981, two mailmobiles, nicknamed "Herbie" and "Rosie", went into service and quickly obtained a place in the daily routine. Following invisibile chemical tracks as they beeped along the halls, the machines delivered mail five times a day on six floors of the building. In the past, the mail was only delivered three times a day. The mailmobiles, which cost about $28,000 each, proved to be a saving of $20,234 per year when purchase cost is compared to salaries that would have been paid to the staff they replaced. Though the mailmobiles required human assistance to use the elevators, the debut was considered successful enough to warrant the addition of a third mailmobile to the fleet.



Most recent addition to the MNR mailmobile fleet, "Timmy" gets set for his Whitney Block rounds.

MNR Study on Use of Biomass Energy to Heat Buildings

The report of a study undertaken by the Ministry in 1981-82 indicates that by substituting heating systems using biomass (forest waste and hybrid poplars) in public buildings, substantial dollar savings can be obtained. Four institutional and public buildings in the Eastern and Northeastern regions of the province were investigated in the study which was funded by the Ministry of Energy. The report stated that replacement of traditional fossil fuel heating systems by conversion to biomass heating has a very short pay-back period--which reduces the capital cost significantly. As well, a program to introduce hybrid poplar plantations on agriculturally uneconomic farmlands in Eastern Ontario is currently under way. This would ensure a future fuel supply for

Total MNR Staff

March 31, 1982	Regular	Unclassified	Total
Main Office	948	492	1,440
Field	3,354	1,073	4,427
Total	4,302	1,565	5,867

biomass energy requirements. Planning is now under way for a pilot project that will convert one of the buildings used in the study to a biomass heating system.

Conversion of Ministry Vehicles to Propane Fuel Systems Continues

An additional 33 MNR pickup trucks were converted to propane fuel power in 1981-82, bringing the total of converted vehicles up to 84. Data comparing the fuel efficiency of converted trucks with that of conventional gas-powered vehicles shows a favorable cost result for the propane conversions.

Affirmative Action Program

The long-term goal of the Affirmative Action Program is to achieve equal opportunity for women Crown employees by raising and diversifying their occupational status.

To this end, during 1981-82, the Affirmative Action Program Office reviewed Ministry policies and practices, provided technical assistance to managers and employees, monitored over 300 job competitions and various manager-implemented program activities. It also coordinated an extensive program of regional delivery which involved approximately 70 Affirmative Action Representatives who planned and arranged meetings and training sessions across the province. Last year, four issues of the Affirmative Action Newsletter were produced.

Highlights included the following:

- Some 70 developmental assignments were provided to female employees (this was far in excess of Management Board's requirements).
- A total of 82.4 per cent of targets for the hiring and promotion of women in under-represented classifications were met.
- A number of important "first-evers" were achieved, including the first female Assistant Deputy Minister, Administration; District Manager; Acting Director of the Office of Management Planning and Analysis; Supervisor of Manpower; Mineral Resources Supervisor; Engineering Service Technician and Darkroom Foreman.



Women in the ministry are setting their sights higher with the help of affirmative action.

Ministry of Natural Resources Statement of Budgetary Revenue and Expenditure for the Year Ended March 31, 1982

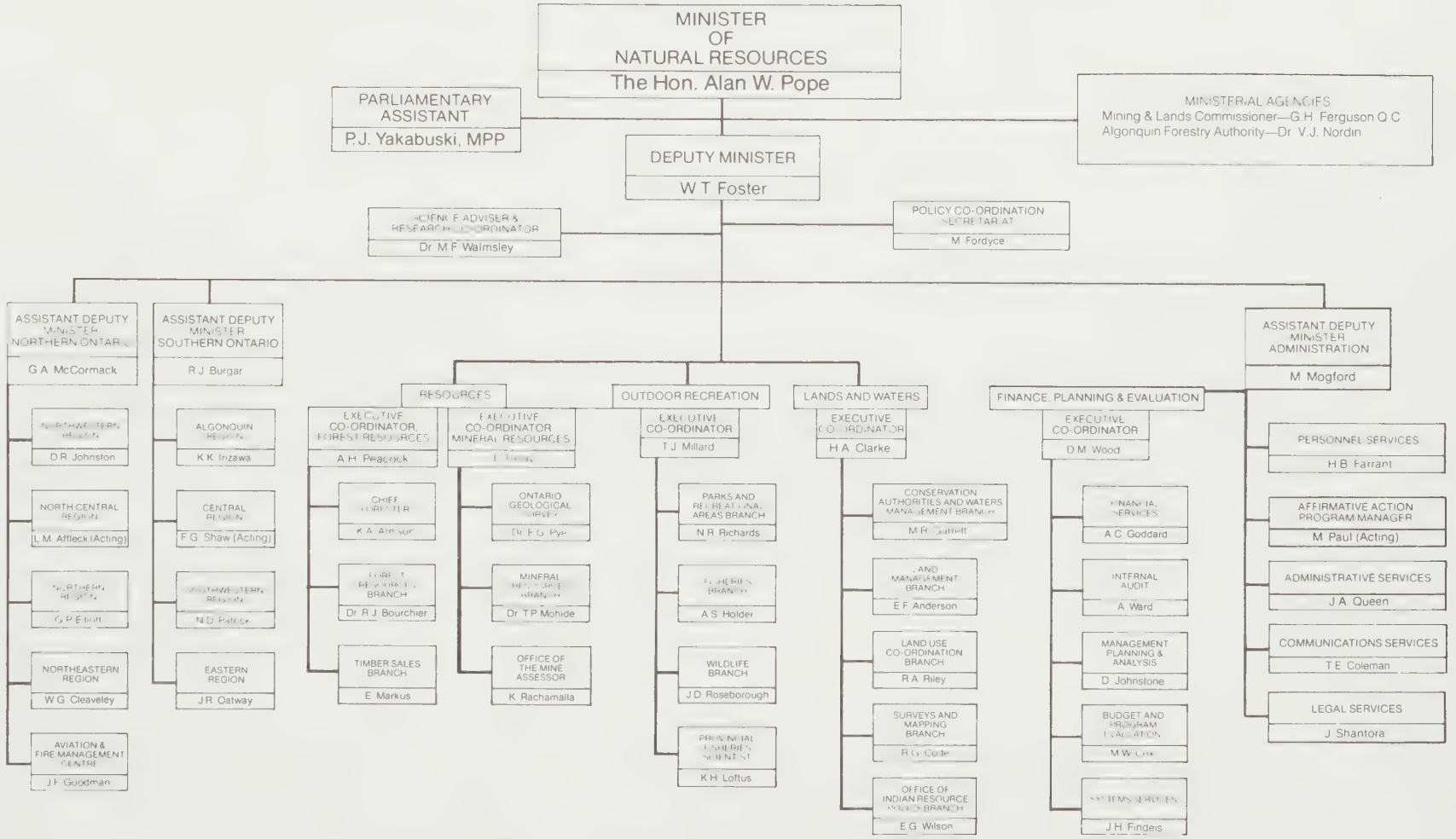
Ministry of Natural Resources
Statement of Budgetary Revenue
for the Year Ended March 31, 1982

Ministry Administration Program	**($thousands)**	**($thousands)**
Reimbursement of Expenditures		
Other	68	
Sales and Rentals	1,767	
Recovery of Prior Years' Expenditures	76	
Other	31	
Total for Ministry Administration		1,942
Land Management Program		
Royalties		
Water Power	20,604	
Timber Area Charges	4,438	
Mining		
Sand and Gravel	1,213	
Acreage Tax	538	
Fees and Licences	610	
Reimbursement of Expenditures		
Government of Canada	512	
Other	697	
Sales and Rentals	1,948	
Sale of Crown Land	2,247	
Recovery of Prior Years' Expenditures	573	
Total for Land Management		33,380
Outdoor Recreation Program		
Reimbursement of Expenditures		
Government of Canada	1,721	
Other	316	
Recreational Areas	6,940	
Fish and Wildlife	14,267	
St. Lawrence Parks Commission	3,683	
Recovery of Prior Years' Expenditures	18	
Sales and Rentals	443	
Royalties	1,154	
Total for Outdoor Recreation		28,542
Resource Products Program		
Mineral Management		
Profits Tax	55,412	
Royalties	688	
Fees and Licences	366	
Sales and Rentals	392	
Forest Management		
Stumpage	38,098	
Forest Products	216	
Stock Production	596	
Reimbursement of Expenditures		
Government of Canada	10	
Other	36	
Sales and Rentals	348	
Royalties	179	
Total for Resource Products	96,341	
Resource Experience Program		
Frost Centre Facilities	341	
Total for Resource Experience		341
Total Budgetary Revenue		160,546

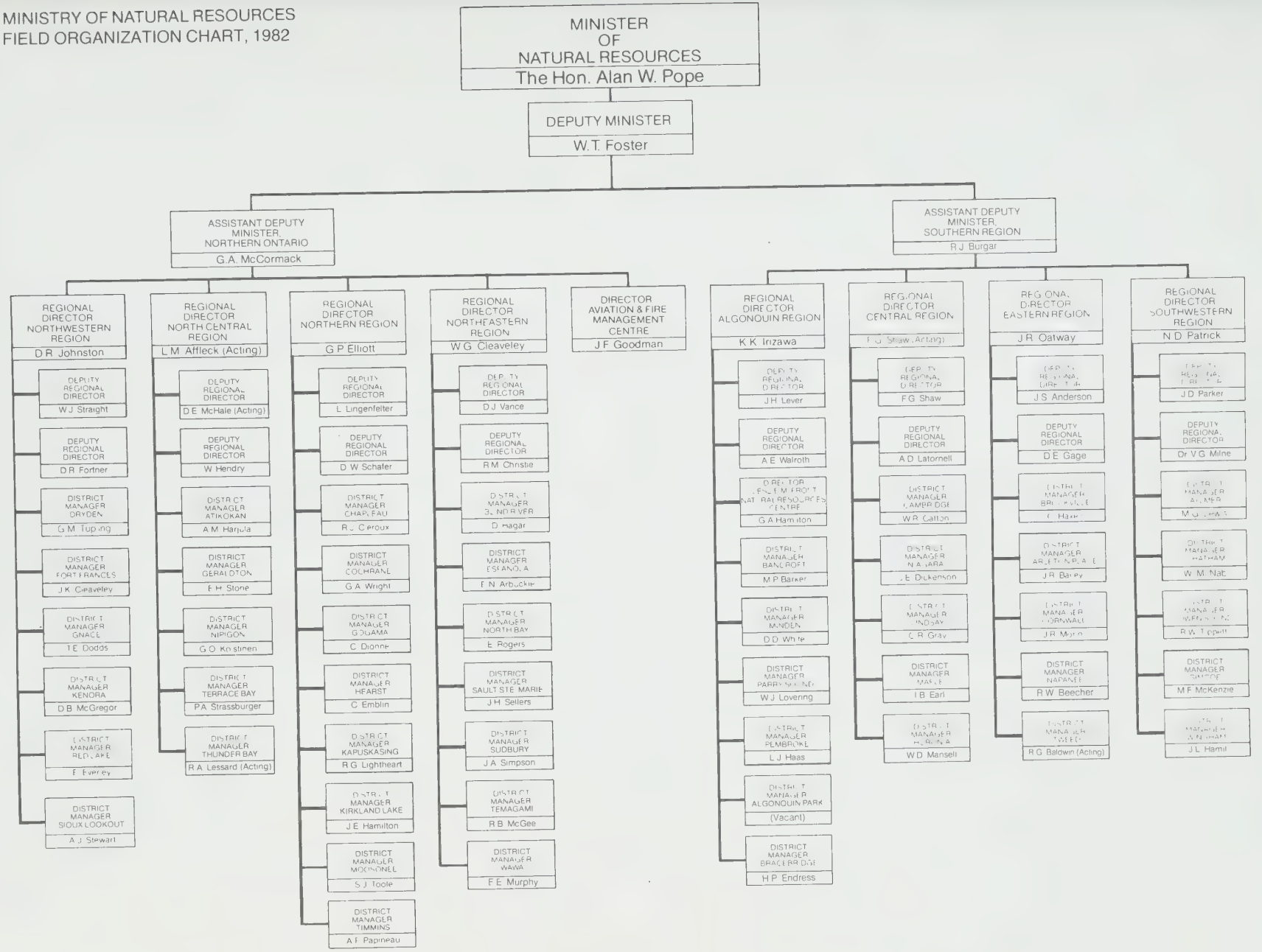
Ministry of Natural Resources
Statement of Budgetary Expenditure
for the Year Ended March 31, 1982

Ministry Administration Program	**($thousands)**	**($thousands)**
Main Office	4,230	
Financial Services	2,466	
Supply and Office Services	3,707	
Personnel Services	1,354	
Information Services	1,076	
Systems Development Services	207	
Legal Services	765	
Audit Services	685	
Field Administration	28,894	
Total for Ministry Administration		43,384
Land Management Program		
Conservation Authorities and Water Management	42,896	
Aviation and Fire Management	42,952	
Extra Firefighting	16,999	
Land Management	15,550	
Resource Access	4,040	
Surveys and Mapping	7,768	
Total for Land Management		130,205
Outdoor Recreation Program		
Recreational Areas	33,456	
Fish and Wildlife	36,625	
St. Lawrence Parks Commission	9,437	
Wasaga Park Community Project	4,711	
Total for Outdoor Recreation		84,229
Resources Products Program		
Mineral Management	15,434	
Forest Management	80,445	
Total for Resource Products		95,879
Resource Experience Program		
Junior Rangers	4,508	
Youth Corps (Experience '81)	3,819	
Leslie M. Frost Natural Resources Centre	1,197	
Total for Resource Experience		9,524
Total Budgetary Expenditure		363,221

MINISTRY OF NATURAL RESOURCES
ORGANIZATION CHART 1982



MINISTRY OF NATURAL RESOURCES
FIELD ORGANIZATION CHART, 1982





Associated Agencies, Boards and Commissions

The Ministry of Natural Resources is associated with a number of agencies, boards and commissions. Each of these associations is based on natural resources management, but the Ministry's relationship with particular groups can vary.

Some relationships are informal. The Ministry is Ontario's official natural resources manager, and often participates informally in the activities of other government and private agencies to promote co-operation in the field.

Other relationships are more direct, through the existence of administrative or financial links between different groups and the Ministry. Some of these related agencies produce a separate annual report outlining their activities. A reader should refer to the specific annual reports of the following for more information:

- Algonquin Forestry Authority
- Conservation Authorities (Ontario had 39 Authorities during 1981-82)
- *Niagara Parks Commission
- *St. Clair Parkway Commission
- *St. Lawrence Parks Commission
- Provincial Parks Council

The following provides a brief description of the agencies, boards and commissions that are either financially or administratively associated with the Ministry, and produce no annual report.

Mining and Lands Commissioner

The Mining and Lands Commissioner exercises administrative and judicial functions under a number of statutes administered by the Ministry of Natural Resources. Last year marked the 75th anniversary of the creation of the office. During the fiscal year 1981-82, there were 55 hearings conducted by the Commissioner. Of these, 17 were under The Conservation Authorities Act; 36 under The Mining Act; one under the Mining Tax Act; and none under either The Beach Protection or Lakes and Rivers Improvement Acts.

Crown Timber Boards of Examiners

The Boards are made up of Ministry staff, and each year they set written and practical examinations in wood measurement. The Boards then recommend that successful examinees be issued with a Scaler's Licence by the Minister.

Game and Fish Hearing Board

The Board, comprised of not more than five members, who are appointed by the Lieutenant-Governor-in-Council, conducts hearings following the refusal by the Ministry of an application for a commercial hunting or fishing licence. The Board hears evidence, and delivers a written summary and recommendations to the Minister, who may or may not decide to issue the licence.

Geoscience Research Review Committee

The Committee was established in April, 1978, to advise the Minister on geoscience research priorities and the merit of research proposals which are submitted to the Geoscience Research Grant Program of the Ontario Geological Survey.

The 11-member committee is made up of representatives from industry, universities and government, and makes recommendations regarding research goals, provides peer review and recommends the awarding of grants to successful applicants. In the past year the program awarded 21 research grants totalling $418,289 to ten Ontario universities.

Ontario Geographic Names Board

The Board, which meets quarterly, has authority over Ontario's geographical names. Last year the Board approved 102 names. The names were disseminated to other agencies and become official for use on maps, charts, in gazetteers, property descriptions, and other documents. The Board makes decisions regarding contentious geographical names or those involving conflicts of interest.

Public Agricultural Lands Committee

Comprised of staff from the Ministry and the Ontario Ministry of Agriculture and Food, this committee reviews all applications for public lands required for agricultural purposes. During 1981-82, the committee dealt with 15 applications, most of which were from farmers wishing to enlarge their operations on Crown lands in northern and northwestern regions.

Left: The Mining and Lands Commissioner conducts a hearing. The 75th anniversary of the Commissioner's office took place in 1981.

*Transferred to the new Ministry of Tourism and Recreation effective April 1, 1982.





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Government
Publications

Ontario

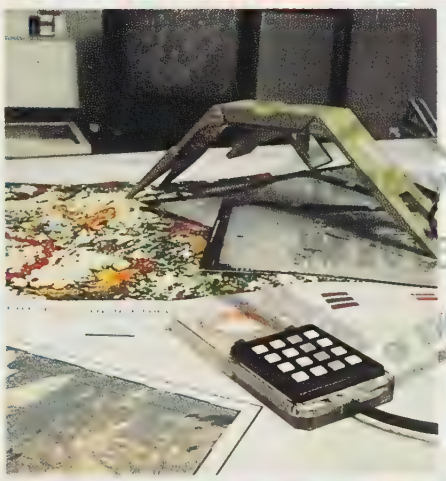
Annual Report 1983
Minister of Natural Resources

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Annual Report

Fiscal year ending March 31, 1983

Minister of Natural Resources of the Province of Ontario

To his Honour
The Lieutenant-Governor
of the Province of Ontario

May it please your Honour
The undersigned begs respectfully
to present to your Honour
the Annual Report of the Ministry of
Natural Resources for the fiscal year
beginning April 1, 1982
and ending March 31, 1983

Alan W. Pope
Minister

All photographs taken by Ministry staff.

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Minister's Message



As I review the ministry's many accomplishments of the 1982-83 fiscal year, I am pleased to note that we have, in a time of government-wide restraint and budget cuts, continued to deliver a wide range of resource programs—and have developed a good many new ones.

The employment bridging program which I initiated in 1982 with the federal Minister of Employment and Immigration was one of last year's real successes. The program provided jobs in forestry, mining, outdoor recreation and other resource areas for skilled, unemployed workers—jobs that made it possible for these workers to stay in their communities, where they have been, and will continue to be, a valuable human resource.

In 1982-83, almost 6,000 workers were provided with close to 90,000 work-weeks of labor. I am pleased that our government funded the $20-million Ontario portion of the program through the Board of Industrial Leadership and Development (BILD), the Cabinet committee responsible for the consolidation and co-ordination of the province's industrial strategy.

Public consultation was a key factor in our resource planning activities in 1982-83. During the year, 18 public forums were held on private land forestry, and another 200 were held in connection with District Land Use Guidelines. These land use meetings gave the ministry's planners a chance to gauge public reaction, identify key issues and take any public concerns into account when making program planning decisions.

It was my pleasure to personally host seven of these land use forums which were attended by 3,300 people.

The land use planning exercise represents 10 years of intensive study and planning by our ministry, and is a major step toward achieving our goal of integrated resource management in Ontario.

During the last fiscal year, five new Forest Management Agreements were signed, including the first FMA with a non-pulp and paper company.

Here again, public consultation had an important part to play. During 1982-83, we held numerous public information sessions throughout the north in connection with the new agreements.

As of March 31, 1983, there were 13 FMAs in existence. They cover an area of almost 80,000 square kilometres —32.8 per cent of the total area under licence to the forest industry in Ontario.

Another highlight of the 1982-83 fiscal year was the ministry's acquisition of two Canadair CL-215 waterbombers—the state-of-the-art firefighting aircraft. The two planes will greatly improve the ministry's ability to respond quickly and effectively to forest fire emergencies, and will help us to achieve our forest fire management goals in Ontario.

During the 1982-83 fiscal period, we also provided incentives for mineral exploration and development. Significant gold mining operations at Hemlo and Sioux Lookout, in addition to exploration and development projects in other communities, have received assistance through the Ontario Minerals Exploration Program, the Hydrocarbon Energy Resources Program and the BILD-funded Exploration Technology Development Fund, to name just a few.

Hemlo, in particular, was a major bright light for the mining industry, and underlined the importance of the ministry's geological funding and research programs.

We have also encouraged community groups and interested individuals all across Ontario to take an active part in the Community Fisheries Involvement Program (CFIP). CFIP gives volunteers from local communities an opportunity to work with our resource managers to get important fisheries and wildlife projects done. Their response and support have been most gratifying.

The ministry's many program initiatives are vast in breadth and scope. Whether we talk about the development of a new provincial Floodplain Management Policy, the Green Paper on Private Land Forestry, the establishment of provincial Drill Core Libraries, the Ontario Basic Mapping Program or the breakthroughs we've achieved in remote sensing technology—we can be proud that MNR has continued to play a major part in ensuring that Ontario's natural wealth will be enjoyed and well-utilized now and into the future.

Looking back at what we have accomplished, I am very pleased with the ministry's performance in 1982-83. And I am looking forward to even greater achievements in the years to come.



Alan W. Pope

Deputy Minister's Message



The Ministry of Natural Resources, as such, has now been in existence for 10 years. They have been challenging, stimulating years—years in which we have developed a highly competent, extremely professional team. And, as the necessity of living with spending restraints continued to be an inescapable fact of life in 1982-83, the pressures on the MNR team have grown. It becomes an even greater challenge to continue delivering effective resource programs, and it makes us all rely more on our ingenuity and expertise.

I'm very pleased to be able to say that MNR's team is meeting the challenges posed by the present economic climate, and I'm convinced that there's a good reason underlying our success: that reason is people.

MNR staff have continually demonstrated the ability to design imaginative and effective ways to deliver our programs efficiently to the people of Ontario. Some examples that come to mind are MNR's special employment programs, the development of comprehensive Crown land recreation policies, our forest access road policy, our contract tree seedling production, our many community fisheries involvement projects, our extension services to private woodlot owners, and the development of selective big game harvest programs.

Just citing examples of the ministry's many and varied programs hardly does justice to the hard work of the staff who make the programs possible. I am thinking here of the special efforts of not only our program delivery staff working with the public, but also of our planning and administrative staff, many of whom have spent the last fiscal year streamlining the areas of communications, affirmative action, the management information system and systems operation.

To serve Ontario well and to deal effectively with the daily challenges which we have so successfully met in the past, each of us must renew his or her commitment to carrying the ministry forward as a dedicated, innovative and exciting organization into the 1980s. I see evidence of that commitment by ministry staff every day, and I am sure that it will continue.



W. T. Foster



Mineral Resources Management

1982-83 Mineral Resources Program Highlights

- Total value of Ontario mineral production was $3.1-billion.
- Ontario produced 33 per cent of all metallic minerals and 40 per cent of all structural materials in Canada.
- The estimated value of mineral production to be assessed under The Mining Tax Act was $2.5-billion, and the province realized a mining tax revenue of $26-million.
- The Ontario Geological Survey managed 40 regular field survey projects and 21 field crews on behalf of other agencies.
- In all, 76 geoscience reports and 191 geoscience maps were produced by the Ontario Geological Survey.
- Under the Ontario Mineral Exploration Program (OMEP), participants spent $24-million on 149 projects completed during the year.

Left: MNR's Ontario Geological Survey hired and trained 114 summer field staff and students to perform mapping and other geological survey work during 1982-83.

OGS Mapping Helps to Find Minerals

How are mineral deposits formed? Where are they? How did they get there? These and other questions underlie the Ontario Geological Survey's (OGS) study of the province's surface and subsurface mineral resources. And the search for knowledge about valuable minerals—and for the answers to these questions—continued during 1982-83.

In 1982-83, 55 teams in all performed mapping work for the ministry's OGS program—35 field survey teams and 20 special project teams. Because only a small percentage of Ontario is mapped to detailed-scale standards at present, the need for OGS's mapping program is vital. Modern maps of the province's mineral resources are invaluable to resource managers and mineral explorers alike.

Nearly two-thirds of the 114 summer field staff and students hired and trained by the ministry took part in Precambrian mapping programs in 1982-83. The students increased not only their practical geological knowledge, but also OGS's ability to meet its 1982 mapping targets.

The geological surveys produce maps and earth science data for two major user groups—the minerals exploration industry and the land use planning community. The surveys help industry explore for metals, construction materials and fuels, and also assist land planners in the formation of long-range land use plans.

Another group of mapping programs was more frontier-oriented. MNR teams performed basic mapping of extremely remote and inaccessible areas. A project was undertaken in the Meen Lake area, for example, which is about halfway between Pickle Crow and Red Lake. The project was the first year of a multi-year study which will map volcanic and sedimentary rocks of this remote area.

Another project looked at the ancient environments in which the Precambrian carbonate rocks in the Grenville geological province (in southern Ontario) were deposited. The team studied the role of stromatolites—algae, to non-specialists—in the origin of these rocks.

The results of the Grenville study will assist exploration geologists to determine mineral deposit environments in this area of southern Ontario, which until now has remained mostly a geological mystery. The area is a potential source of zinc, lead and other minerals.

In 1982-83, there were several projects to facilitate the use of geophysical data. A test range was established in the Night Hawk Lake area and is already being used by major geophysical companies to calibrate and check their equipment. Results of gravity studies in the Cobalt area were processed to derive the configuration of hidden igneous rocks in the area.

Detailed summaries of all of 1982's OGS field surveys were published under the title, *MP 106: Summary of Field Work, 1982*, in December of 1982.



Left: In August, 1982, MNR hosted a delegation of industrial minerals specialists from the People's Republic of China. Here, the delegation visits the Toronto Brick Company.

Right: Geologists with the federal-provincial Southern Ontario Geological Survey (SOGS) take rock samples during one of the eight geological survey projects undertaken.

Special OGS Co-operative Projects

During the summer of 1982, 20 additional field parties surveyed and evaluated local mineral resources across Ontario. The funds for these projects were provided by a number of different agencies, but OGS managed all the projects.

Eight projects were carried out under the Southern Ontario Geological Survey (SOGS) program, which is jointly funded by MNR and the federal Department of Regional Economic Expansion (DREE) under the Eastern Ontario Subsidiary Agreement.

Five projects were funded by the Ministry of Northern Affairs through the Northern Ontario Geological Survey (NOGS) program.

Four studies—on uranium deposits, gold mineralization, quaternary deposits and basal till—were made as part of the Kirkland Lake Initiatives Program (KLIP). This program is equally funded by the Ministry of Northern Affairs and DREE under the Community and Rural Resource Development Subsidiary Agreement. An unexpected bonus from this program was the discovery of kimberlite—the source rock for diamonds—in the Kirkland Lake area.

A study of the availability of silica sand and clay took place during 1982-83 with funding from the Ontario Ministry of Northern Affairs, under the Northern Industrial Mineral Survey (NIMS).

Two additional Precambrian mapping projects were made possible with funds from the federal and provincial governments under the Northern Ontario Rural Development Agreement (NORDA).

Aggregate resource inventories were undertaken during 1982-83 in 20 townships in southern Ontario. MNR is outlining and assessing these aggregate resources so that municipalities can use them more efficiently. In the past, aggregate deposits have been lost because some land use plans overlooked their potential. This resulted in a locality having to bear the brunt of higher costs of transporting aggregate into the area. Locally supplied aggregate reduces construction costs and planned rehabilitation of the source area means that land can be put to other useful purposes after the aggregate operation is finished.

Some of That Which Glitters is Gold

When most people think of a gold mine, they think of grizzled prospectors sifting their pans in the Klondike, or of Humphrey Bogart swinging his pick-axe in the Sierra Madre. Gold mining is not quite as romantic as it is usually made out to be, but its profitability is not exaggerated.

In 1982, a large and significant gold deposit was outlined in Ontario at Hemlo, on Highway 17, just west of the junction with the Manitouwadge highway. It has been estimated that by 1987, the Hemlo operation could be producing more than 9.3 tonnes (about 300,000 troy ounces) of gold per year. This would make Hemlo one of Canada's major gold camps.

The excitement engendered by the Hemlo gold find continued the surge in prospecting and development activity in Ontario. The current staking rush, which began in 1980, has become the fourth largest in the province's history. The rush continued in 1982, with over 33,000 claims staked. Gold was certainly the brightest light on the Ontario minerals horizon during 1982-83.

Ministry publications produced by OGS were used as practical tools by those involved in the Hemlo discovery. Particularly useful were a mineral deposit circular dating from 1981 and a 1979 preliminary map. As well, funding under the Ontario Mineral Exploration Program (OMEP) proved to be another practical aid which was used to advantage by three of the companies involved in Hemlo.

The Hemlo experience underlined the danger of writing off an area with respect to minerals, even after years of exploration. At Hemlo, 15 individuals and five companies had spent 37 years investigating the area's potential before the present developers struck paydirt.

Spurred on by Hemlo's success, the ministry continued to study many other gold-bearing areas—areas where gold has been found in the past and which are now being reinvestigated to determine their present potential. MNR also continued to identify and record Ontario's mineral resources for the long and short-term purposes of its strategic land use planning.

Construction Continues at Detour Lake

Detour Lake, about 200 kilometres northeast of Timmins, was also the scene of continuing prospecting and develop-



ment during 1982-83. Construction and open-pit mining are under way at the Detour Lake project, with the start up of underground operations anticipated by 1987. Detour Lake could become the second-largest gold-producing area in Canada. By 1988, the combined output of Hemlo and Detour Lake will probably double Ontario's present gold production.

Spreading the Word: Mineral Resources Publications

Our publications will probably never make the top 10 on the non-fiction best-seller lists, but they are extremely popular in the mineral resources community. In 1982-83, MNR's mineral resources specialists produced more than 300 publications on the geology and mineral resources of Ontario—maps, studies, reports, papers, reprints, guidebooks and others.

MNR issues these publications each year to provide current geological information and news about the many factors affecting mineral resources development in Ontario. The documents are needed (and used) by a wide clientele—industry, other government ministries, agencies and universities—to keep abreast of current information and to maintain a good inventory of background data.

Policy makers also use our publications to develop views on Ontario's resource potential in the context of world markets and trends. In the resource policy and planning sphere, effective decision-making depends upon a comprehensive grasp of the technological, environmental and economic factors that affect the mineral resources sector.

A number of publications in 1982-83 took advantage of recent technology to make important information available. A computer analysis of 1982 statistics for Ontario's mineral industry, the *1982 Ontario Mineral Score*, used a laser printer linked to MNR's Queen's Park computer. A more recent development is the Geoscience Data Inventory Folio (GDIF). During fiscal 1982-83, 37 of the Folios were produced, with many more to come. The series replaces the former Data Series Maps. The Folios' advantage is that they can be readily updated—their standardized page layout makes the addition of information simple.

Each Folio consists of a concise summary of all known exploration data for the area covered by the Folio. The summaries are accompanied by location maps showing mining claim group boundaries. There are also exploration data maps showing the location of mineral occurrences, drill holes, geophysical anomalies and other relevant data.

The Folio maps are at 1: 31,680 scale, the same as that used for mining recorder claims maps and OGS colored geological maps. Now, for the first time, these three closely-related publications have a common scale, making them highly compatible, and thus even more useful to those whose business activities require them.

Putting the Public in the Picture

During 1982-83, MNR's mineral deposits specialists presented more than 70 talks and displays at public forums all over Ontario.

One highlight presentation was a three-hour symposium on gold—"The Geology of Gold in Ontario"—given at the Geoscience Research Seminar in Toronto in December, 1982. The symposium was attended by 600 people, and was very well received. The talks at the symposium included presentations on Invisible Gold (sub-microscopic particles of gold); computer software for interpreting earth science information; and the applicability of our knowledge of southwestern U.S. gold deposits to the Ontario situation. The speakers came from MNR and various universities. The published proceedings of the symposium—with an initial run of 3,000 copies—sold out almost immediately.

Our Geological Experts Share Their Knowledge

What's the point of having knowledge unless you share it? Many information-sharing sessions were organized during 1982-83 by OGS geologists to transfer their knowledge to industry and to the academic community.

During 1982, OGS staffers gave 142 talks and arranged and conducted some 56 field trips for groups ranging from international scientific delegations to local prospectors' associations.

About 100 invited guests participated in a provincial update on gold in Toronto in March of 1983. Dubbed the Pentrillium Conference (after a parallel U.S. conference which meets each year—the Penrose), the delegates came in roughly equal proportions from industry, and from government and universities. In late

March, 1983, a two-day gold sampling seminar was held in Kirkland Lake.

MNR staff also played host during 1982 to a delegation of five industrial minerals specialists from the People's Republic of China. The delegation, which arrived in August, was introduced to industrial minerals and mineral aggregate activities in both Ontario and Quebec during its three-week visit.

Geoscience Research Grants Surpass $2-million in Five Years

In 1982, grants totalling almost $500,000 were awarded to seven universities for 22 research projects under the OGS Geoscience Research Grant program. The awards brought the program's five-year total expenditures to more than $2.3-million.

The grants support projects of up to three years' duration, which are of interest to Ontario's mineral development and exploration industry. At the Geoscience Research Seminar last December, more than 750 registrants heard papers summarizing the research performed by the grant recipients.

BILD Funds Close to $1-million in Exploration Technology Development

In the fiscal year ending March 31, 1983, the ministry's Exploration Technology Development Fund (ETDF), which is administered by OGS, awarded grants totalling $984,938 to 16 Ontario-based companies. The funding was provided by the province's Board of Industrial Leadership and Development (BILD). BILD is the Ontario Cabinet committee which consolidates and co-ordinates implementation of the government's economic development strategy.

The research grants were for applied research and development leading to the manufacture and marketing of equipment, techniques and facilities which will promote efficiency in mineral exploration.

At the Geoscience Research Seminar in Toronto, in December, 1982, ETDF grant recipients delivered papers and set up displays of their work. In the two years of ETDF's existence, 29 firms have received almost $2-million in grants towards the development of exploration technology.

Second GOMILL Agreement Signed

Thanks to funding from the province's BILD program, the second GOMILL (the Test/Custom Gold Mill Project) was signed during 1982-83 with Goldlund Mines Ltd. for a property in Sioux Lookout. The company is now constructing a custom milling facility.

Under the agreements, BILD will provide an interest-free, five-year forgivable loan to entrepreneurs who cannot build their own mills because of insufficient capital or volume of proven ore. GOMILL is designed to allow bulk sampling to give a better indication of grade and to see if there are any metallurgical processing problems.

BILD-funded Hydrocarbon Energy Resources Program on Target

The BILD-supported Hydrocarbon Energy Resources Program completed all activities as planned during the 1982-83 fiscal year. The projects promote the assessment of Ontario's lignite, peat and oil shale, petroleum and natural gas resources, stimulate private sector development, and may contribute to the province's energy self-sufficiency goals.

Three main projects dealing with the province's peat resources were undertaken—completion of peat inventories in the Hearst, Armstrong, Pembroke and Peterborough areas; testing of remote sensing methods for peatland mapping; and investigation of peat chemistry in selected wetland areas of northeastern Ontario.

In addition, 32 drill holes in the Chatham, Sarnia and Port Stanley areas were completed, to determine the potential of oil shales in these areas. The drill holes produced some 4,267 metres of drill core. Special projects were commissioned at the Universities of Waterloo and Toronto to examine the drill cores.

Seven drill holes for lignite (brown coal) resource assessment were completed in the remote Moose River Basin of the James Bay Lowland. Not much is known about the subsurface geology of the area, and geologists want to find out how the lignite-bearing sediments are distributed in order to make an evaluation of lignite as a potential energy resource. Lignite deposits were found in two of the holes.

Below: MNR is establishing provincial Drill Core Storage Libraries so that the valuable information contained in cores like these will be on record and available.



Industrial Mineral Grants Offered by BILD

Under the Small Rural Mineral Development Program, the Board of Industrial Leadership and Development (BILD) offered $3.37-million in grants to five companies during 1982-83. The grants will encourage overall capital expenditures of at least $14-million. They will be used to expand a dolostone production operation on Manitoulin Island, and to develop a granite quarry with a cutting and polishing operation, as well as assist a talc operation and a calcium carbonate plant in eastern Ontario. The program also offered a grant to expand a talc operation near Timmins.



Under the program, the province offers grants of up to 25 per cent of eligible capital costs to businesses seeking to expand or to establish new industrial mineral operations.

OMEP Encourages Big Exploration Year

Last year's Ontario Mineral Exploration Program (OMEP) was very active. During 1982-83, 149 OMEP-assisted projects were completed—almost triple the number of the previous year. Total expenditures by participants were $24-million and total benefits disbursed amounted to $4.7-million.

Under the program, the government provides incentives of up to 25 per cent of eligible exploration expenditures to qualifying operations. Factors contributing to last year's increased pace of exploration included lower inflation and interest rates, renewed speculation in gold and the stimulus provided by the successful gold strike at Hemlo, Ontario.

Mining Taxation Revenues Down

The 1982-83 mining tax revenues in Ontario were $26-million, less than half the amount collected during 1981-82. Though some areas of the mining industry experienced losses, there were some which did exceptionally well: gold, uranium and industrial minerals. The lower 1982-83 tax revenues can be attributed to the overall economic sluggishness of the year and world mineral markets.

Read Any Good Drill Cores Lately?

What do you get when you drill hundreds of metres into bedrock with a diamond drill? You get a drill core—a cross section of the below-surface geology of the rock you've drilled. The information interpreted by geologists from drill cores is crucial to a company exploring for minerals. What's more, the information is very expensive to obtain.

In the past, drill cores, and the information that they contain, were often casually placed in boxes and left on the ground in the area of the drilling site. As a result, primary and subsequent exploration information was often lost or damaged. Later, many prospects had to be re-drilled at a considerable cost in time and money.

To get around the problem of storing drill cores and to make the drill data collection system in Ontario more efficient, MNR has developed a program to establish Drill Core Libraries. During 1982-83, construction work continued on the first three storage facilities, at Timmins, Kirkland Lake and Sault Ste. Marie.

The storage libraries will save time and cut costs for the whole industry, at the same time as they help improve the overall quality of exploration.

The libraries are being funded by the province's Board of Industrial Leadership and Development (BILD) at a total estimated cost of $5-million.

Ask Your Friendly Neighborhood Geologist —Anything

During fiscal 1982-83, Ontario's 14 regional and resident geologists had a very busy year. They fielded hundreds of questions about earth science from the public, gave seminars, prepared Geoscience Data Inventory Folios, conducted field trips, gave lectures—all in a day's work for them. The geologists are stationed in 14 locations throughout Ontario, and they function as key links between MNR and the citizens of Ontario.

Every regional and resident geologist's office contains a library of both published and unpublished reports. Here, the public, as well as members of the geological community, have access to MNR publications; publications of other government agencies; records of exploration activity submitted for assessment work credit; company prospectuses and reports from the files of the Ontario Securities Commission.

With the continuation of the three-year staking rush in Ontario, the geologists had a busy year. But—as hundreds of people found out in 1982-83—the resident and regional geologists are never too busy to assist the public, the geological community, or anyone else interested in earth science information.



Forest Resources Management

1982-83 Forest Resources Program Highlights

- Ontario's Crown timber harvest was 14,786,521 cubic metres in 1982, producing stumpage revenues of $35,036,957.
- MNR nurseries produced 74.7 million bare root and container seedlings in 1982-83, and the ministry contracted privately for 5.5 million container seedlings through private growers.
- Under The Forestry Act, MNR managed 110,846 hectares of agreement forests.
- The ministry supervised the aerial spraying of herbicides and insecticides over 28,685 hectares in 1982-83.
- By March 31, 1983, 13 Forest Management Agreements were in place, covering 79,597 square kilometres, or 32.8 per cent of the total area under licence to the forest industry.

Left: Ontario's forest industry provides direct employment for some 80,000 people.

Close to 10,000 and Still Counting

Since the passage of The Woodlands Improvement Act (WIA) in 1966, MNR has been providing the advice and assistance of skilled foresters and forest technicians to the private woodlot owners of Ontario. By March of 1983, there were close to 10,000 WIA agreements in existence—an impressive testimonial to the program's success.

Under these WIA agreements, MNR staff advise on such things as suitable species for growing; thinning, pruning and tending measures; soil erosion problems; and wildlife cover. The ministry will also plant new trees for the owner—who pays for them and protects them.

To ensure the continuing success of these partnerships, MNR wants to keep up to date on private land forestry issues that affect all the citizens of Ontario. In 1981-82, MNR surveyed 12,400 rural private woodlot owners to gather information on the various present uses of private woodlands, as well as on what woodlot management activities, if any, are currently taking place.

The results of the survey were published in early 1982 under the title, *Rural Lands and Landowners of Ontario: A Private Land Forestry Perspective.*

During 1982-83, ministry foresters participated in a public discussion on the report's findings. They also produced a Green (background) Paper on private forestry, entitled *Private Land Forests: A Public Resource*, in October of 1982. The two documents provided a focus for an active and informative public discussion.

To get a wide cross-section of opinions and ideas about private land forestry, information was sought and obtained during 1982-83 from the public, from other government ministries, and from agencies and universities. MNR also encouraged and received written submissions from interested parties. In all, some 15 public forums were held across Ontario to gauge the public pulse on private woodlots and forestry.

What resulted was an impressive amount of information. This information will be analysed in 1983-84, and will be used to formulate MNR's recommendations in a White (policy proposal) Paper on private land forestry.

Nine New Container Seedling Contracts Signed

Anyone who has ever planted a garden knows what a back-breaking job it can be. Imagine planting some 55 million trees. That's the combined annual output of container stock produced by the Ministry of Natural Resources and the private seedling growers with whom it has contracts. In fiscal 1982-83, nine new contracts were signed, raising overall capacity by 13.4 million seedlings a year.

Why all the interest in growing trees? The answer is that the tree seedlings are needed as an indirect result of another MNR program—Forest Management Agreements (FMAs). These are agreements between the ministry and forest companies for harvesting, replanting and other silvicultural work in areas



Left: MNR nurseries produced 74.7 million bare root and container seedlings in 1982-83.

in which the companies are operating. With almost 80,000 square kilometres of producing forests now covered by FMAs, there is a huge demand for tree seedlings.

The province of Ontario's Board of Industrial Leadership and Development (BILD) has provided funds over the past two years for expanding existing private nursery facilities and developing new ones. The facilities are located throughout Northern Ontario, close to the forests being harvested by the industry. As of March 31, 1983, BILD has an estimated capital investment in the program of more than $3.5-million. The 1982-83 BILD contribution was just over $2-million.

The nine new contracts bring the number of existing contracts to 15. The combined efforts of MNR nurseries and contracted private growers produced some 80 million bare root and container seedlings during the year.

New Black Spruce Seed Orchards

Not just any old seed will do when it is being used to replant a productive forest after harvesting. If there's a need for forests that will grow quickly, have trees with the right size, shape, disease resistance and wood quality, they must start from superior seeds. A seed orchard is a place for producing seeds with these desirable qualities.

In 1982, 11 new black spruce seed orchards were planted in MNR's Northwestern Region. The orchards will provide a continuous source of desirable seeds for regeneration in years to come. Eventually, some of the seeds will be stored at the province's main seed depository, located in the village of Angus, just outside Barrie.

It will be a good 10 to 15 years before these orchards can produce enough black spruce seeds for collection. But when they do begin to produce, the seeds will have the special qualities MNR foresters have been looking for. The trees which will grow from the seeds will be bigger, and of better form.

The White Spruce Cone Harvest: it Was a Very Good Year

Timing is crucial in the harvesting of white spruce cones. The seeds remain in the cones for only a few days after the cones have ripened. In 1982, MNR monitoring and a touch of technology combined to ensure that our regeneration targets for white spruce will be met in the future.

The ministry constantly monitors cone development and production in Ontario's forests. The regeneration of evergreen forests depends on it. In 1982, in our Northern Region, there was a bumper crop of white spruce cones for the first time in 13 years. Our monitoring really paid off. We were able to take full advantage of nature's bounty.

To harvest the white spruce cones, MNR had to move quickly. The Fandrich Cone Harvester helped the effort considerably. Developed in British Columbia as a way of harvesting cones in inaccessible areas, the Fandrich machine has to be suspended from a helicopter.

A mesh cage-like device—which contains an interior funnel with slats in its sides—is lowered over a tree and then hauled back up.

In the process, the tree's branches are caught in the funnel's slats, which strip the cones off the branches. When the machine leaves the tree, it takes with it the cones which contain the precious seeds.

Not all the spruce cones, of course, were harvested in such an ingenious and highly technological way. Most of them had to be obtained in the traditional manner—by hand. What counts, however, is that the prodigious bounty of the 1982 white spruce cone crop was not wasted.

TSI-NOW Focuses on Progress

Imagine trying to keep track of more than five billion tree seeds by hand, on index cards. That was what MNR's staff faced every time an inventory had to be made at Ontario's main tree seed depository. Fortunately, a great leap forward was made in the filing and inventory system at the depository last year.

The new system has made life a lot easier for those whose task it is to keep track of the province's available tree seeds. Reports of amounts of seed in storage, seed germination test results and shipment records formerly took several weeks to prepare. The TSI-NOW system can provide these reports, as well as other, more sophisticated kinds of statistical information, within a matter of a few minutes.

The new computerized inventory program now provides the ministry's silviculturalists with a complete, up-to-date and accurate record. The depository contains over five billion seeds from over 60 different species. The seeds are kept in cold storage until they're needed for direct seeding or for growing nursery stock.

The TSI-NOW program is stored in the ministry's Queen's Park mainframe computer, with smaller terminals at the depository and at Main Office. All available data is immediately accessible "on screen". TSI-NOW is a completely interactive system, allowing its users to "talk" to it. And the fact that it is written in FOCUS means that our forest resources experts can obtain visually effective graphic displays, complicated calculations, and comparisons of virtually any on-line sets of statistics within an amazingly short time. The program is proving invaluable in the preparation of detailed statistical reports, inventory control plans and statistical tables.

Five New Forest Management Agreements Signed Last Year

Development and extension of the ministry's Forest Management Agreement (FMA) program continued last year. The agreements provide for the harvesting and regeneration of the forest in which a company is working, as well as for the undertaking of all silvicultural work—site preparation, regeneration and tending. The silvicultural treatments are paid for by MNR.

In 1982-83, five new FMAs were signed, bringing to 13 the total number of existing agreements. One of the new agreements, with Waferboard Corp. Inc. for the Romeo Malette Forest, was the first Forest Management Agreement between the ministry and a non-pulp and paper company. The other FMAs were for the Pineland Forest with Pineland Timber Co. Ltd.; and the Nagagami Forest with Ontario Paper Co. Ltd.; the Manitou Forest with Boise-Cascade Canada, and the Seine River Forest, also with Boise-Cascade Canada.

In 1982-83, the province's Board of Industrial Leadership and Development (BILD) provided close to $7-million to assist in constructing access roads and carrying out silvicultural operations under the agreements.

By the end of fiscal 1982-83, the 13 FMAs covered 79,597 square kilometres of productive forest, or 32.8 per cent of the total forest area under licence to companies operating in Ontario.

A company that has entered into an FMA prepares management, operating and annual plans which are subject to MNR approval. Both the management and operating plans undergo a public review, and must be in accord with the ministry's strategic land use planning goals. Those goals reflect a truly comprehensive approach to forest management. The ministry's objective is to manage Ontario's forests for the greatest benefits to both the tenants (the forest industry) and the owners (the people of Ontario).

AFIP Spells Jobs for the Forest Industry

The forest industry provides direct employment for 80,000 people in Ontario, with a 1982 total value of shipments of $7.9-billion. But in the past year, worldwide economic problems have meant tough times for many of Ontario's forest industry workers. Many were laid off, putting families, communities—even entire regions—under a great deal of stress. To provide jobs and keep these workers from leaving communities, MNR initiated the Accelerated Forest Improvement Program (AFIP) during 1982-83, with the cooperation of the Canada Employment and Immigration Commission (CEIC).

The program utilized Section 38 of the Unemployment Insurance Act, and offered laid-off forestry workers an incentive bonus, coupled with their unemployment insurance payments, to work on forest improvement projects in their communities. AFIP has helped forestry-dependent communities to retain skilled workers, to maintain payrolls, and to sustain much of their social and economic vigor.

A total of 1,361 laid-off forest industry workers were recalled last year, to work on some 89 company-sponsored projects under AFIP. They performed almost 19,000 work-weeks of labor—site preparation, tending, silvicultural support, timber and forest management, fire training and protection, as well as product salvaging. (Almost $300,000 worth of wood products were salvaged last year under AFIP.)

The province's Board of Industrial Leadership and Development (BILD) fund provided approximately $5.5-million to AFIP for this work. The program's first-year success promises well for the future and is an excellent example of how MNR's programs respond to practical needs.

BILD Assists New Waferboard Facility in Englehart

A $3-million grant from the province's Board of Industrial Leadership and Development, in addition to a $5-million provincial loan guarantee, led to the official opening—in July, 1982—of the Grant Waferboard mill in Englehart. The funds were part of a $12-million federal-provincial package to assist the creation of the $30-million facility.

Waferboard is a composite lumber product used mainly in construction. It is manufactured from poplar, which has traditionally been considered a low-grade lumber species. In recent years, waferboard has started to compete with construction grade plywood for a share of the market—to the extent that more than two dozen new waferboard mills have been constructed in Northern Ontario over the last few years.



The Grant mill in Englehart created hundreds of jobs in the area. There were 175 new jobs in the plant alone, between 210 and 240 new forestry jobs (to supply the mill), and 25 jobs in transportation.

MNR Researchers Develop a Grammar of the Forest

Thanks to the results of a four-year research program in which MNR played a major part, Ontario foresters will soon be speaking the same language when they describe forest ecosystems. Foresters, as do biologists, use Latin names to identify vegetation types and tree species. But when it comes to describing forest ecosystems—the exact type of prevailing vegetation and soil conditions of an area—a kind of Babylonian division of tongues has always existed. The Forest Ecosystem Classification Technique—a kind of forestry grammar—will change what up to now has been a major source of confusion for everyone involved in forestry.

Begun in 1979, the research project involved scientists from MNR's Ontario Tree Improvement and Forest Biomass Institute (OTIFBI), the ministry's Northern Region Forest Ecologist, and scientists from Agriculture Canada, the Canadian Forestry Service and Environment Canada. The research team was supported by funds from each participating group as well as by funds from the MNR/DREE Forest Management Subsidiary Agreement.

During 1980, the team collected data and then used state-of-the-art computer techniques to analyse the information. Among other variables, they looked at correlations between types of vegetation—trees, shrubs, mosses, and all other forms of plant life. They also examined types of soil conditions, including soil quality, classification, drainage and aeration, as well as mineral and organic content.

The result of these studies was a method of classifying forest ecosystems using scientifically reliable criteria. The classification system will be of great use to all those who are interested in forestry, but will also help logging companies to plan pre-cutting activities. The system enables foresters to specify forest types with precision, and consequently, what silvicultural prescriptions will best suit an area. Harvesting, and especially regeneration techniques, can now for the first time be keyed directly and specifically to the forest type which they will suit.

For example, the classification system can be used to make decisions on whether to clear cut or strip cut a forest. Similarly, the system can be used as a basis for deciding whether to let a forest grow back naturally or whether some form of artificial seeding or planting would be best.

A handbook for the foresters using the system was completed in draft form during 1982-83. The book will be produced with plastic pages, so that foresters can use it in the field in all weather conditions.

So far, about half of the claybelt area of MNR's Northern Region has been studied, though the research team plans to expand its work to include forest ecosystem information for all of Ontario. Foresters in our Northern Region are already making silvicultural prescriptions about harvesting forests based on the new classification system. Response to the new system has been enthusiastic, and several of the province's major pulp and paper companies have decided to begin using it immediately.

The Forest Resources classification techniques developed co-operatively by the Ministry of Natural Resources will herald a new age in forest management planning and operations. As more and more information about forest types is gathered, the ecosystem classifications—each one like a filing cabinet—will expand and be adapted to accommodate the new data. At the same time, Ontario's forest resource management, planning and operational efficiency will grow.

Working to Control Forest Pests

The spruce budworm remained the most widespread and destructive forest insect in Ontario throughout 1982-83. However, the overall area which suffered moderate-to-severe defoliation from the budworm decreased by more than half from the previous year, to just over eight million hectares.

During 1982-83, MNR carried out aerial spraying against spruce budworm over a total of 3,425 hectares in the Hearst, Kapuskasing and Temagami vicinities. Non-chemical insecticides



Left: Under The Forestry Act, MNR managed more than 110,000 hectares of agreement forests in 1982-83.

Right: Ontario gave one of MNR's two-year-old hybrid poplars to the federal government on Sun Day—June 21, 1982—as a symbol of the two governments' commitment to developing renewable energy technology.

were applied to 90 per cent of the areas treated, which included commercial forests, two provincial parks, spruce plantations, seed production areas and an overwintering yard for moose.

At the same time, the ministry's program to find a biological control method for budworm continued. The major developments of last year's program were techniques for mass-rearing and aerially releasing *Trichogramma minutum*, a tiny budworm egg parasite.

MNR also conducted a successful aerial spraying program over 402 hectares of mixed-oak forest in the Kaladar area to curb the spread of the gypsy moth, which has defoliated trees in eastern Ontario. During 1982-83, a federal-provincial committee was formed to develop a strategy for managing the gypsy moth in Ontario.

For the second consecutive year, the MNR-Canadian Forestry Service cooperative program conducted aerial and ground surveys to detect the destructive European strain of a disease known as Scleroderris canker. To date, the fungus has not been found in eastern Ontario pine forests.

The root rot fungus *Cylindrocladium* has posed a problem recently in several southern Ontario nurseries. During 1982-83, MNR initiated a detailed study to evaluate nursery losses, mortality among planted seedlings and the effectiveness of soil fumigants in combating the disease.

One of the major factors limiting the survival and growth of new forests is the intense competition trees have from other vegetation. To ensure that the trees have the best opportunity for light, moisture and nutrients during crucial early growth, other vegetation such as grasses, brush and weeds is suppressed by the use of herbicides. During 1982-83, 34,660 hectares of young regenerating forests were treated. MNR conducted two-thirds of this spraying, while the remaining one-third was done by pulp and paper companies under Forest Management Agreements with the ministry.



Outdoor Recreation Management

Parks and Recreational Areas

1982-83 Parks Program Highlights:

- In 1982, Ontario's 133 Provincial Parks played host to more than 6 million visitors.
- More than 150 delegates from MNR attended a four-day Parks Superintendents' Conference in June, 1982, at the Leslie M. Frost Natural Resources Centre in Dorset.
- MNR parks staff undertook 113 design projects to upgrade, improve and maintain Ontario's provincial parks in 1982-83.
- In early 1983, following the Quetico Provincial Park master plan review, the ministry reaffirmed the Park's wilderness status.

Left: MNR's Conservation Officers are its front-line outdoor recreation management specialists.

Candidate Parks Identified Through Land Use Planning

District land use planning was one of the main activities for the ministry's staff during 1982-83, and our parks specialists were no exception. Parks representatives attended all the public meetings held in connection with land use planning, and fielded hundreds of questions from the public and special interest groups.

MNR staff evaluated the public reaction to a number of candidate provincial parks which had been proposed in the draft guidelines—wilderness parks, natural environment parks, waterway parks, nature reserves, recreational parks and historical parks.

The public input and other information is to be used to develop a final list of proposed provincial parks when the District Land Use guidelines are completed early in 1983-84.

Special Employment Program Gets Job Done

As in the mining, forestry, fishery and conservation authorities areas, the special employment program for parks was both popular and successful during 1982-83. The 95 parks projects completed provided 1,197 laid-off workers with 16,184 work-weeks of activity. Funds for the program were provided by the province's Board of Industrial Leadership and Development.

The work performed under the program was mainly labor-intensive maintenance and upgrading work—painting picnic tables and park buildings, brushing and clearing hiking and cross-country ski trails, painting signs, straightening posts in parking lots and along roadways—most of which would not have been possible without the assistance of the special employment program.

Many Provincial Parks Emphasize Ontario's History

Not too many tourists who visit Wasaga Beach are aware that, about 170 years ago, the beach reverberated with the sound of cannon fire. But visitors to the Museum of the Upper Lakes and the Nancy Island Historical Site—both features of Wasaga Beach Provincial Park—can relive the dramatic story of the HMS *Nancy* and the daring exploits of her crew.

During the War of 1812, the *Nancy* was requisitioned to carry supplies between Fort Michilimackinac and a base at the mouth of the Nottawasaga River. During August of 1814, the *Nancy* was hidden in the Nottawasaga River to escape marauding U.S. warships, but she was discovered and three U.S. warships started firing on her.

Outnumbered and outgunned, the *Nancy* caught fire, burned to the waterline and sank. The crew, however, escaped.

They sailed across Lake Huron by open boat, bound for Fort Michilimackinac. There they found the fort besieged by the same three U.S. warships. In a daring nighttime raid, the *Nancy*'s crew boarded the American vessels, captured two, and used them to rout the third.



Over the years, time, tides, and the weather took their toll on the remains of the *Nancy*, until MNR's parks staff stepped in. During 1982-83, work was completed on a structure which houses the bones of the *Nancy*. The climate-controlled building—really an environmental enclosure—provides viewing ramps and ports which allow visitors a unique look at history.

MNR's provincial parks staff have developed the *Nancy* site—and hundreds of other culturally and historically interesting sites like it across the province—as part of their continuing program to accent the cultural and historical heritage of Ontario.

Other Cultural Heritage Program Highlights

MNR staff also initiated several co-operative cultural heritage projects with other ministries during 1982-83.

For example, the Ministry of Northern Affairs funded the installation of a new interpretive display and the upgrading of the hiking trail at the Agawa Bay Indian pictograph site in Lake Superior Provincial Park.

The park's pictographs—pictures painted centuries ago on the rocky Lake Superior shoreline—are best visited when the lake is relatively calm.

The largest of the rock paintings at Agawa Bay commemorates the crossing of Lake Superior by about 50 men in four or five large canoes. According to the pictographs, the trip lasted four days, and was safely completed only by the intercession of Misshepezhieu, the great lynx and demi-god of the lake.

Also with MNA funding, Marten River Provincial Park's turn-of-the-century logging camp and museum were improved during 1982-83. The original camp is being reconstructed in order to give park visitors an idea of what life and conditions were like for Northern Ontario lumberjacks some 80 years ago.

And, under the Northern Ontario Rural Development Agreement (NORDA), a consultant's study was undertaken during 1982-83 to determine the economic feasibility of establishing a reconstructed 1920s clay belt farmstead in Greenwater Provincial Park, near Cochrane.

Not All Museums are Indoors

Logging originated in the Chapleau region in the 1880s, when the construction of the transcontinental railway through the area created a high demand for railway ties. Today, the early bush camps are rotting and overgrown, and lumberjacks' memories are fading fast. But at Wakami Lake Provincial Park, visitors are invited to experience the golden age of logging and share an important part of Ontario's heritage.

In the park, located between Chapleau and Sudbury, visitors can stroll along a forested path from display to display in an outdoor logging museum. In 1982-83, the museum's exhibits were protected by the construction of specially-designed shelters. The hiking trail was also improved by the addition of new interpretive displays and new descriptive texts for the exhibits. This work was aided by funds from the special employment program for parks.

At Murphys Point Provincial Park, near Perth, the special employment program for parks also made possible the renovation and repair of several historical buildings, part of a pioneer farmstead built inside what are now the park's boundaries. Not only are the farmstead buildings of historic interest, they also serve as a trail centre for the park's year-round hiking and cross-country skiing activities.

How to Make Time Stand Still

Petroglyphs Provincial Park, northeast of Peterborough, is the site of a number of rock carvings, or petroglyphs, which may have been made by Algonkian peoples or, as recently theorized, by Nordic explorers. The carvings are thought to be between 500 and 1,000 years old, and are a source of fascination to park visitors.

During 1982-83, MNR worked with the Canadian Conservation Institute on a study to identify the major causes of deterioration at the site, and to come up with some solutions to the problem. The study found that the carvings are deteriorating because of algae growth, erosion, frost damage and exposure. The petroglyphs are carved in a soft marble which the ancient artists found rather easy to manipulate. But the marble's softness also makes it highly vulnerable to the effects of nature. MNR is now considering several possible solutions—to preserve the site and minimize future deterioration.

Left: Ontario's 133 Provincial Parks hosted more than 6 million visitors in 1982.

Park Superintendents' Meeting a First

Ontario's provincial parks are vastly different in scope and nature. But the people who manage them have one thing in common. Parks superintendents are all extremely busy, and their responsibilities don't give them much time to get together. However, they did get an opportunity to meet as a group for the first time in June, 1982.

Over 150 delegates from the provincial parks, MNR districts, regions and Main Office attended a four-day conference at the Leslie M. Frost Natural Resources Centre in Dorset, to share mutual concerns and discuss common problems.

The conference featured panel discussions between the superintendents and user interest groups; workshops on customer relations and marketing strategies; plus in-service and training updates. Of special interest to the managers were an exhibit and trade show featuring the products of more than 50 companies dealing in parks-related equipment—tractors, cash registers, lawnmowers, electronics, chain-saws and other tools—in short, all the varied equipment and machinery necessary to run a provincial park effectively.

Spirit of Volunteerism Sweeps Parks

It's no secret that we live in difficult economic times. The Ministry of Natural Resources developed programs during 1982-83 which allow for much greater community involvement in natural resources areas than ever before. And MNR has discovered something: with the right kind of planning, government can often provide worthwhile programs to the public which are not necessarily at public expense—services which the ministry normally would not be able to provide.

Wherever Ontario's provincial parks system can benefit from the participation of interested, competent people—chances are that a corps of able volunteers is ready to help out.

Take the case of Fathom Five Provincal Park, on the Bruce Peninsula. The park's excellent underwater diving potential has long made it a favorite of diving enthusiasts and clubs. But demands on the park were so great that MNR was hard-pressed to keep up with them.

So MNR sought help from local diving clubs. These organizations agreed to provide volunteers to patrol the park and its waters, to give first-time divers orientation instruction, and to ensure that all park users meet the safety regulations. The volunteer program was made official in a formal agreement which was signed by the ministry and the Ontario Underwater Council.

During 1982-83, the Council provided more than 1,000 hours of volunteer service to the park, and was presented with an honorary scroll in March, 1983 in recognition of its efforts.

Other volunteer projects last year included work on park planning, visitors' interpretive programs and general park maintenance.

A special series of lectures on archaeology was also given at various provincial parks by a retired ROM staffer who volunteered his services.

We're Keeping Ontario's Provincial Parks First Class

Maintaining a high quality system of provincial parks in today's economic climate is not an easy job. In the last fiscal year, MNR parks staff undertook 113 design projects and completed 95—all for the upgrading, development and improvement of Ontario's provincial parks.

MNR parks staff established their project priorities by paying attention to the comment cards which visitors fill out. And most of the 1982-83 projects were at the top of the list of park users' priorities: adding hot water or showers to comfort stations; renovating park buildings; doing electrical installations and repairs; adding to or improving sewage and water systems; and improving park roadways. This work was assisted by MNR's regular summer student and junior ranger programs, and by the BILD-funded special employment program for parks.



Wildlife

1982-83 Wildlife Program Highlights

- Two sets of peregrine falcons were released from the Whitney Block at Queen's Park during the summer of 1982.
- The selective deer harvest program and a mild winter in 1982-83 proved beneficial to deer populations throughout central and Northern Ontario.
- More than 1,600 adult Canada geese were relocated to reduce the number of nesting pairs in the Toronto waterfront area.
- In 1982-83, the ministry completed a six-year study of the effects of cottage development on lakeshore properties.

Left: MNR's selective deer harvest program is designed to protect fawns and females in areas where there is stress on the population.

Relocating the Metro Geese

The revitalization of the Toronto waterfront in recent years has attracted lots of attention from tourists and city-dwellers alike. But it's not just humans who enjoy the waterfront area. Canada geese love it, too, because Metro's waterfront provides them with an ideal nesting and habitat site.

Usually, Canada geese are a welcome addition to any natural setting. But too many of them can be too much of a good thing, and as many as 3,000 have been counted along the Toronto waterfront at one time. This causes problems for the various agencies trying to provide clean recreational facilities along the waterfront.

The Ministry of Natural Resources, in co-operation with the Canadian Wildlife Service, Ontario Place and the Metro Toronto Parks Department, began management measures several years ago to relocate the Metro geese. The objective is to reduce the number of nesting pairs of Canada geese to about 50, by moving the excess geese and their eggs to other parts of Ontario, Canada, and the U.S., where Canada geese are not found.

In 1982, 578 goose eggs were collected and shipped to the Fort Frances and Pembroke Districts of MNR, as well as to Nova Scotia. In addition, 1,668 Canada geese were rounded up and sent to the Owen Sound and Huronia Districts of MNR, as well as to Arkansas and Ohio. This reduced the number of nesting pairs along the Toronto waterfront by more than 50 per cent.

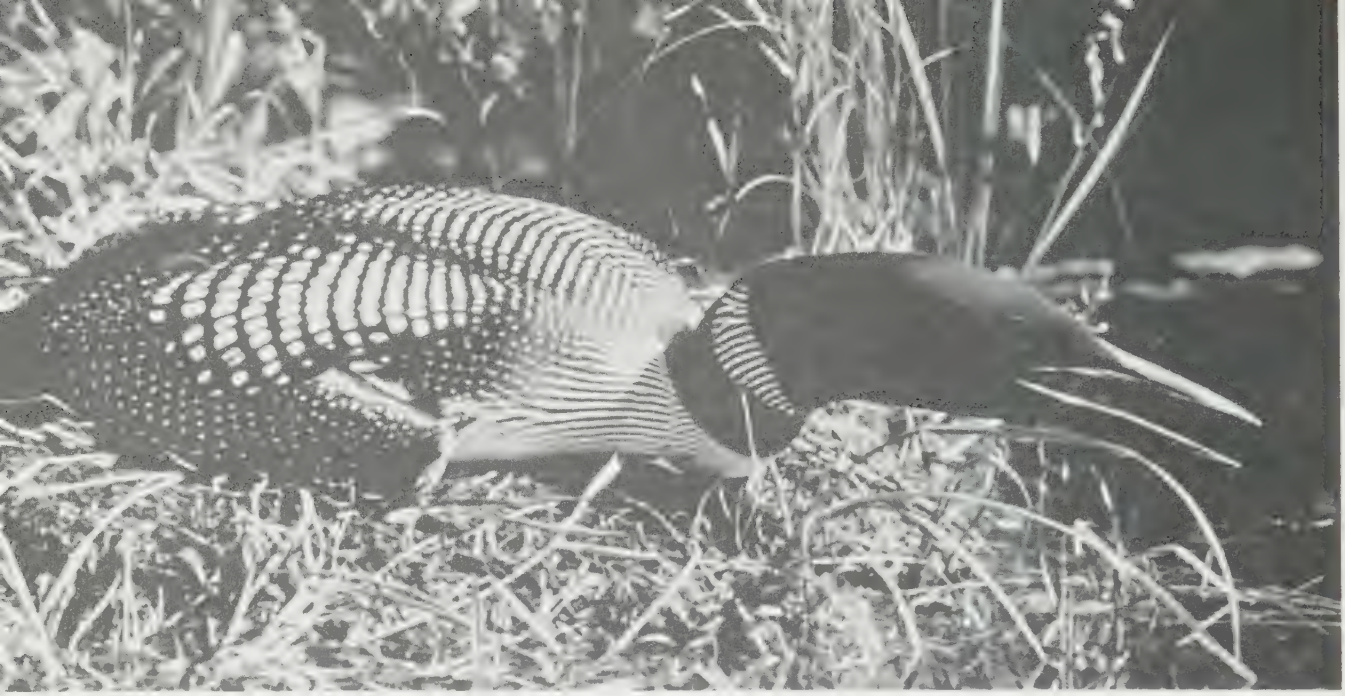
Nongame and Endangered Species Program Broadens

MNR's nongame and endangered species program has evolved over the years into a truly comprehensive program. Its components include: identifying and assessing rare, threatened, or endangered species; developing management measures to protect threatened species; developing co-operative programs with other agencies; contracting research; and developing systems for data storage and retrieval. The program also conducts research and makes recommendations on matters regarding the development of nongame and endangered species policies.

In 1982, two sets of peregrine falcons were released from the Whitney Block at Queen's Park: two males in July and four females in August. In May, 1982, one of the four peregrines from last year's release project returned. The falcon was identified as a male—leg band number 1P9—and was later named "Whitney" by MNR staffers.

The falcon's return was an encouragement to the peregrine release project, which for several years has been attempting to re-establish a breeding population of this endangered species in Ontario.

MNR has also studied and developed management guidelines for such nongame species such as the osprey, the red-shouldered hawk, and the spotted turtle, to name only a few. In addition, the ministry has undertaken a status study of Ontario's snapping turtles, and has investigated the management requirements of the small-whorled pogonia, a highly endangered plant species.



Lakeshore Capacity Study Completed

Can loons be loved to death? What happens when people build cottages near the loons' habitat? Do the cottages destroy the environment of the very wildlife species which the cottagers have left the city to enjoy?

These and other questions received some answers in 1982-83 upon completion of a six-year study of lakeshore capacity requested by the Ministry of Municipal Affairs and Housing. MNR studied over 100 lakes and a wide variety of wildlife species—loons, deer, frogs, salamanders, hawks, songbirds and mink.

We discovered that loons can be loved to death. Often, when people approach loons too closely, it puts too much stress on the young birds. In an effort to escape, they will dive into the water and drown. No loon-watchers want this to happen, of course, but people are completely unaware that they pose such a threat to the birds.

The study also showed that when cottages are built on lakeshores, the buildings can remove or disturb nesting sites. And that's a sure way to reduce the loon population.

Cottage construction on lakeshores can reduce or impair other wildlife habitats, too. Mink, deer, and red-shouldered hawks are all adversely affected, while other species seem to find the lawns and open areas created by cottages ideal places in which to live.

After MNR staffers had analysed the results of the study, they developed a set of guidelines for cottage area development which would minimize the disruption to wildlife.

A computer model of all the factors which have to be considered in the development of cottages on lakeshore properties was also prepared. Now planners can test different cottage development activities and determine which ones are least damaging to local wildlife. The computer model is an effective new planning tool which can help conserve wildlife habitats and still let cottagers enjoy the natural outdoor environment.

Wildlife Brochure Useful to Hunters, Naturalists

In 1982, MNR's wildlife specialists prepared a revised edition of *Wildlife Management Areas in Ontario*, a brochure of interest to hunters and naturalists alike. It provides brief descriptions and maps of areas in southern Ontario which MNR manages for wildlife and outdoor recreation activities—hunting, wildlife viewing, photography, hiking, archery, trap-shooting, cross-country skiing and berry-picking. The booklet also describes the two kinds of wildlife management areas that have been developed in southern Ontario by the ministry: Provincial Wildlife Areas and Wildlife Extension Landowner Agreement Areas.

Provincial Wildlife Areas are open all year and most of them permit hunting during the open seasons. Six of these areas are inside provincial parks, where waterfowl or pheasant hunting is allowed, but where other activities may be restricted.

Wildlife Extension Landowner Agreement Areas are privately owned but maintained co-operatively by the landowners and MNR. The owners permit public access to the wildlife resources on the property in return for the ministry's assistance with wildlife management. Some of these areas have been developed exclusively for wildlife viewing. Hunting is permitted in the rest except within zones which are posted with "No Hunting" signs.

Booklet Available on White-tailed Deer

MNR specialists also revised and updated the booklet, *The White-Tailed Deer in Ontario*, in 1982-83. This 35-page booklet describes the life history, biology and habitats of this popular game species. The delicate natural balance between the deer, their natural predators and man is also discussed. The new booklet details MNR's selective deer harvest program which is designed to protect the breeding female segment of the herd and thus allow the herd to increase closer to the carrying capacity of the deer range.

The White-Tailed Deer in Ontario is not only helpful to hunters, but also to naturalists, conservationists and students. It contains photographs and tables, as well as a map of the distribution of the white-tailed deer in Ontario. The brochure can be obtained by contacting the Communications Services Branch of the Ministry of Natural Resources at Queen's Park, MNR district offices across the province, and the Ontario Government Bookstore.

Left: Waterfowl habitat improvement projects were an important part of MNR's special employment program for fisheries and wildlife.

Sommaire du rapport annuel

du Ministère des Richesses naturelles pour l'exercice terminé le 31 mars 1983

Message du ministre

Alors que je passe en revue les nombreux résultats obtenus au cours de l'année budgétaire 1982-1983, je suis heureux de constater que nous avons continué à réaliser d'importants programmes portant sur les ressources naturelles tout en en créant bon nombre de nouveaux, malgré une époque de restrictions budgétaires qui affectent toutes les activités du ministère.

Le programme d'emploi que nous avons lancé en 1982, conjointement avec le ministre fédéral de l'Emploi et de l'Immigration, a été un des véritables succès de l'an dernier. Le programme spécial de création d'emploi a fourni des débouchés aux travailleurs spécialisés mis à pied dans les domaines de la foresterie, des mines, des loisirs de plein air et autres. En outre, il leur a permis de demeurer dans leurs collectivités.

En 1982-1983, près de 6 000 travailleurs se sont partagés près de 90 000 semaines d'emploi. Je suis très heureux que, par l'entremise du Conseil de leadership et de développement industriel (CLDI), notre gouvernement ait financé la part de l'Ontario, qui s'est chiffrée à 20 millions de dollars.

En 1982-1983, la consultation avec le public a été un facteur-clé de nos activités de planification des ressources. Au cours de l'année, nous avons tenu 18 tribunes publiques sur les forêts privées et 200 réunions sur les directives d'aménagement du territoire des districts. Ces dernières ont permis aux planificateurs du ministère de juger des réactions du public, de repérer les questions-clés et d'en tenir compte lors de l'établissement des directives finales. Au mois de janvier 1983, j'ai rencontré personnellement les représentants de 27 groupes d'intérêts spéciaux pour obtenir leurs commentaires et connaître leurs préoccupations à propos de ces directives.

Les activités d'aménagement du territoire représentent 10 ans d'étude et de planification poussées grâce auxquelles nous avons franchi une étape importante dans l'atteinte de notre objectif de gestion intégrée des ressources en Ontario.

Au cours de la dernière année d'imposition, nous avons signé cinq ententes de gestion forestière, dont la première jamais signée avec une société qui n'est impliquée d'aucune façon dans le domaine des pâtes et papiers.

Une fois de plus, la consultation avec le public a joué un rôle important dans ces ententes. En 1982-1983, nous avons tenu de nombreuses réunions d'information dans le Nord à ce sujet.

Au 31 mars 1983, 13 ententes de gestion forestière étaient en vigueur. Elles couvrent une superficie de près de 80 000 kilomètres carrés, soit 32,8 pour cent de la superficie totale pour laquelle des permis ont été accordés à l'industrie forestière ontarienne. Nous sommes très fiers des progrès que nous avons accomplis dans le cadre du programme des ententes de gestion forestière, qui a été inauguré en 1980.

Un autre événement marquant de l'année budgétaire 1982-1983 a été l'achat par le ministère de deux avions-citernes Canadair CL-215, qui sont les avions les plus perfectionnés pour lutter contre les incendies de forêts. Ces deux appareils permettront au ministère de réagir rapidement et efficacement aux incendies et l'aideront à atteindre ses objectifs dans la lutte contre les incendies de forêts en Ontario.

Au cours de l'année budgétaire 1982-1983, nous avons également stimulé la prospection et la mise en valeur des mines. D'importantes opérations

d'extraction de l'or à Hemlo et à Sioux Lookout, et des projets de prospection et de mise en valeur dans d'autres communautés, ont reçu l'appui du Programme ontarien d'exploration minière, du Programme des ressources énergétiques en hydrocarbures et du Fonds de développement des technologies de prospection financé par le CLDI, pour n'en nommer que quelques-uns. Hemlo, en particulier, a mis en lumière l'industrie minière et a souligné la valeur des programmes de financement et de recherche du ministère.

Nous avons aussi encouragé les groupes communautaires et les personnes intéressées, à travers l'Ontario, à participer activement au Programme de participation communautaire aux pêches. Ce programme offre aux bénévoles des communautés locales l'occasion de travailler avec nos gestionnaires des ressources pour mener à bien d'importants projets portant sur la faune et les pêches. La réaction enthousiaste et l'appui de ces bénévoles nous ont grandement fait plaisir.

Les nombreux projets que le ministère a commencés ont une portée et une ampleur considérables. Que nous parlions de l'élaboration d'une politique de gestion des plaines inondables, du Livre vert sur les forêts privées, de la création d'une Collection provinciale de carottes de sondage, du programme de cartographie de base de l'Ontario ou de nos découvertes en technologie de télédétection, nous pouvons être fiers du rôle de premier plan que le MRN a continué à jouer pour faire en sorte qu'aujourd'hui comme à l'avenir, les ressources naturelles de l'Ontario soient bien utilisées et appréciées.

En jetant un coup d'oeil rétrospectif sur les résultats que nous avons obtenus, je suis très heureux de ce qu'a accompli le ministère en 1982-1983 et je me réjouis à l'avance des résultats plus importants qu'il obtiendra dans les années à venir.



Alan W. Pope

Message du sous-ministre

Le ministère des Richesses naturelles, en tant que tel, existe depuis 10 ans. Ces années stimulantes nous ont offert de nombreux défis et permis de réunir une équipe supérieurement qualifiée et spécialisée. Et puisqu'en 1982-1983 nous n'avons pas pu échapper à la nécessité de nous soumettre aux restrictions budgétaires, les pressions exercées sur l'équipe du MRN se sont aggravées. Il est devenu de plus en plus difficile de continuer à offrir des programmes de ressources efficaces, et nous avons tous dû faire davantage appel à notre expertise et à notre ingéniosité.

Je suis très heureux de pouvoir dire que l'équipe du MRN a relevé les défis que présente le climat économique actuel, et je suis persuadé que la clé de notre succès a été le personnel.

Ce personnel a fait constamment preuve de savoir-faire dans la création de moyens ingénieux et avantageux pour offrir nos programmes à la population de l'Ontario. Parmi les exemples qui me viennent à l'esprit, je cite les programmes spéciaux de création d'emploi, la conception d'une stratégie détaillée de loisirs sur les terres de la Couronne, notre politique des chemins d'accès aux forêts, notre production d'arbres de plantation sous contrat, nos nombreux projets de participation aux pêches, nos services d'aide à la gestion des forêts privées et l'élaboration de nos programmes de récolte sélective de gros gibier.

Ne mentionner que quelques-uns des nombreux programmes du ministère ne rend pas justice à l'excellent travail du personnel qui les a rendus possibles. Je pense tout spécialement aux efforts accomplis non seulement par les personnes qui oeuvrent directement avec le public, mais aussi par celles qui planifient et administrent ces programmes. Beaucoup se sont occupés, au cours de cette année budgétaire, de perfectionner l'efficacité des communications, de l'action positive, du système informatique de gestion et du fonctionnement des systèmes.

Pour bien servir l'Ontario et faire face énergiquement aux défis quotidiens comme nous l'avons fait par le passé, chacun de nous doit renouveler son engagement à faire du ministère un organisme dévoué et créateur pour le reste de la décennie. Chaque jour, je suis le témoin de cet engagement de la part du personnel du ministère et je suis persuadé qu'il se maintiendra.



W.T. Foster

Gestion des ressources minérales

Comment sont formés les dépôts de minéraux? Où les trouve-t-on? Ces questions et bien d'autres servent de base à l'étude qu'effectue la Commission géologique de l'Ontario à la surface et la sous-surface des ressources minérales de la province.

Les cartes que produit le ministère, dans le cadre de son programme de cartographie, sont d'une valeur inestimable pour les directeurs de ces ressources et les explorateurs. En 1982-1983, 55 équipes ont réalisé des travaux de cartographie pour la Commission.

En décembre 1982, la Commission a publié des sommaires détaillés de toutes les études sur le terrain qu'elle a accomplies. Dans 20 cantons du Sud de l'Ontario, on a procédé à l'inventaire des ressources d'agrégats.

Rappelons qu'en 1982, un important dépôt d'or a été découvert à Hemlo, en Ontario, juste à l'est du carrefour des autoroutes 17 et Manitouwadge. On prévoit que d'ici 1987, l'exploitation d'Hemlo pourrait produire 9,3 tonnes d'or par année, ce qui classerait cette mine parmi les plus importantes au Canada.

Également au cours de l'année, les experts du groupe des ressources minérales du ministère ont publié près de 300 ouvrages traitant de la géologie et des ressources minérales de l'Ontario.

Autres faits sur la gestion des ressources minérales pour 1982-1983

- L'Ontario a produit 33 pour cent de l'ensemble de la production de minéraux métalliques et 40 pour cent de la production de matériaux structuraux du Canada.
- La valeur estimée de la production minérale taxable selon la Loi de l'impôt sur l'exploitation minière a été de 2 500 000 000$ et elle a procuré un revenu de 26 000 000$ à la province.
- La Commission géologique de l'Ontario a dirigé 40 projets ordinaires de levés sur le terrain et 21 équipes travaillant sur le terrain pour le compte d'autres organismes.
- Au total, la Commission géologique de l'Ontario a produit 76 rapports et 191 cartes géoscientifiques.

Programme minier

- La valeur totale de la production minière de l'Ontario a été de 3 100 000 000$.
- Dans le cadre du Programme ontarien d'exploration minière (POEM), les participants ont consacré 24 000 000$ à 149 projets qui ont été menés à bien.
- On estime que les dépenses de l'industrie de la prospection minière ont atteint 100 000 000$.
- Les travaux de prospection et de développement à Hemlo et au lac Detour portent à croire que ces deux sites doubleraient la production ontarienne d'or d'ici 1988.

Gestion des ressources forestières

Au mois de mars 1983, le ministère des Richesses naturelles avait signé 10 000 ententes avec des propriétaires privés en vertu de la Loi sur le reboisement qui a été adoptée en 1966.

Au cours de l'année, le ministère a publié les résultats d'une enquête menée auprès de 12 400 propriétaires de lots boisés privés pour connaître les utilisations qu'ils font de leurs lots.

Afin d'assurer un approvisionnement continu en graines d'épinettes noires, on a semé 11 lots de cette espèce dans la région du Nord-Ouest de l'Ontario.

En 1982, la région nord du ministère a connu une récolte exceptionnelle de cônes d'épinettes blanches, pour la première fois depuis 13 ans.

Le ministère possède maintenant un système informatique d'inventaire qui lui fournit un rapport précis des cinq milliards de graines qu'il entrepose. Ces graines proviennent de plus de 60 espèces d'arbres.

L'industrie forestière procure de l'emploi à 80 000 personnes en Ontario. Cependant, plusieurs travailleurs ont été mis à pied au cours de l'année. Pour empêcher ces travailleurs de quitter leurs collectivités et leur procurer de l'emploi, le ministère a mis sur pied, en 1982-1983, son Programme accéléré d'aménagement forestier, en collaboration avec Emploi et Immigration Canada et le Conseil de leadership et de développement industriel (CLDI). Par l'entremise de ce programme, 89 projets ont été réalisés par 1 361 travailleurs forestiers qui se sont partagés 19 000 semaines d'emploi au total.

Un groupe d'experts de divers organismes a préparé un système de classement—sorte de grammaire—qui sera très utile à tous ceux qui s'intéressent à la sylviculture. Une première ébauche du volume regroupant les termes techniques propres à ce secteur a été complétée cette année.

Autres faits sur les ressources forestières

- La récolte de bois de la Couronne en Ontario s'est chiffrée à 14 786 521 mètres cubes et les droits de coupe ont produit un revenu de plus de 35 000 000$.
- Les pépinières du MRN ont produit 74,7 millions de jeunes plants déracinés ou en pots et le ministère a passé des contrats avec des pépiniéristes privés pour la livraison de 5,5 millions de jeunes plants en pots.
- En vertu de la Loi sur les forêts, le MRN a géré 110 846 hectares de forêts régies par une entente de gestion.
- Le ministère a supervisé la pulvérisation aérienne d'herbicides et d'insecticides sur 28 685 hectares de forêts en 1982-1983.
- En collaboration avec le Conseil de leadership et de développement industriel, 13 ententes de gestion forestière avaient été conclues, au 31 mars 1983. Ces ententes couvraient 79 597 kilomètres carrés de forêts, soit 32,8 pour cent de la surface totale pour laquelle des permis ont été accordés à l'industrie forestière.

Loisirs de plein air

Les rives du lac Ontario, dans la région métropolitaine de Toronto, sont devenues les endroits préférés des Bernaches du Canada. Depuis des années, le ministère des Richesses naturelles cherche à les reloger et à réduire à environ 50 le nombre de couples reproducteurs de cette espèce. Cette année, on a expédié des bernaches et des oeufs de bernaches dans diverses régions de l'Ontario, du Canada et des États-Unis.

Le ministère a aussi émis une série de directives concernant les zones où la construction de chalets risque de détruire l'habitat du huard.

En plus de la révision d'une brochure sur les différentes sortes de zones de gestion de la faune des régions du Sud de l'Ontario, les experts du ministère ont mis à jour une autre brochure qui décrit l'évolution, la biologie et l'habitat du Cerf de Virginie.

Le programme de récolte contrôlée du chevreuil, mis sur pied par le ministère en 1980, a connu des résultats positifs en 1982-1983 puisque de nombreux chasseurs et non chasseurs ont rapporté avoir vu beaucoup plus de chevreuils dans le Centre et le Nord de l'Ontario.

Une des principales activités du ministère en 1982-1983 a été l'élaboration des plans d'aménagement du territoire des districts. La population a été invitée à exprimer ses commentaires au sujet d'un certain nombre de parcs proposés et le personnel du ministère a fait l'analyse des propositions soumises. Les directives d'aménagement du territoire des districts seront complétées au début de 1983-1984.

Prédire si la population des ours noirs, des chevreuils ou des originaux diminuera ou augmentera dans 20 ans n'est plus chose impossible grâce à l'ordinateur. Les chercheurs du ministère utilisent maintenant les renseignements fournis par ce précieux instrument pour modifier les plans de gestion de la faune afin qu'ils soient plus efficaces.

Au cours de l'année budgétaire, le personnel des parcs du ministère a entrepris 113 projets d'amélioration, d'exploitation ou de mise en valeur. De ce nombre, 95 ont été complétés.

Autres faits concernant les loisirs de plein air pour 1982-1983

- Les stations piscicoles du MRN ont produit 6 312 000 poissons.
- 3 140 000 poissons ont été relâchés dans les Grands Lacs.
- Les pêches commerciales de l'Ontario ont récolté quelque 34 110 293 kilogrammes de poisson représentant une valeur de 36 788 345$.
- Depuis 1979, on a analysé 4 130 échantillons d'eau prélevés à 2 875 emplacements afin d'établir la susceptibilité des lacs ontariens aux dépôts acides.
- Dans le cadre du Programme de participation des collectivités aux pêches, quelque 3 300 journées de travail bénévole ont été consacrées à 22 projets approuvés.

Gestion des terres et des eaux

D'importants projets d'aménagement des terres et des eaux ont été complétés ou entamés au cours de l'année 1982-1983 et la consultation publique a joué un rôle majeur dans les prises de décision à propos de ces projets.

De nouvelles techniques de cartographie sont apparues et les cartes topographiques de la province ont été mises à jour.

Le Centre ontarien de télédétection du ministère a reçu un octroi de 3 000 000$ du Conseil de leadership et de développement industriel (CLDI) pour la modernisation de son matériel de programmation et l'élargissement de son programme de formation.

Suite à la révision de la politique de location des terres de la Couronne, des clubs sportifs se sont vus confier une partie de la gestion des pistes d'hiver qu'ils entretiennent.

Le Canada, l'Ontario et le Québec ont signé, pour la première fois, une entente pour assurer la protection contre les inondations des terres situées le long de la rivière Ottawa.

Autres faits sur la gestion des terres et des eaux pour 1982-1983

- Le ministère a présenté 20 directives d'aménagement du territoire dans le Sud de l'Ontario et 25 dans le Nord.
- Dans le cadre du Programme de cartographie de base de l'Ontario, cinq pour cent de l'Ontario a été cartographié. On a achevé la cartographie à grande échelle de neuf municipalités et on a commencé les travaux dans 25 autres centres.
- On a achevé les nouveaux levés des limites cantonales du Sud de l'Ontario. Actuellement, 9 100 kilomètres de limites cantonales en Ontario ont fait l'objet de nouveaux levés.
- Dans le cadre du Programme Canada-Ontario de réduction des dégâts dus aux inondations, on a consacré 1 500 000$ à 38 projets de cartographie de terres inondables.
- Le ministère a construit 410 kilomètres de routes et quatre ponts pour un total de 16 500 000$, dans le cadre du programme d'accès aux ressources.

Centre de surveillance et de lutte contre les incendies

Grâce aux conditions climatiques favorables et à l'excellent travail des équipes du Centre de surveillance et de lutte contre les incendies, peu d'hectares de forêt ont été détruits par le feu en 1982-1983.

Une hausse budgétaire de 6 000 000$ a permis au Centre de perfectionner ses activités de lutte et de protection contre les incendies et d'accroître son personnel de 30 à 175 membres.

La nouvelle politique de gestion des incendies du ministère a été approuvée en 1982. Elle a comme objectifs de prévenir les pertes humaines, les blessures personnelles et la perturbation qu'entraînent les incendies de forêt; de garantir que les incendies affectent très peu les travaux publics, les propriétaires privés et les ressources naturelles et d'utiliser les avantages que procurent les incendies dans la gestion des terres et des ressources.

C'est l'aire de l'ordinateur! De plus en plus, le ministère met des systèmes d'ordinateurs à la disposition des directeurs de lutte contre les incendies pour faciliter les prises de décisions importantes concernant les stratégies d'élimination des incendies. Ces systèmes sont concentrés dans les cinq centres de lutte contre les incendies du ministère et on projette l'installation d'un système central dans toutes les régions de la province qui sont propices aux feux de forêt.

Un effort particulier a été fait, au cours de l'année, pour sensibiliser la population en matière de sécurité en forêt, afin de prévenir les feux de forêt causés par la négligence humaine.

La gestion efficace des incendies exige une bonne communication. À cette fin, le ministère a conçu une trousse spéciale de communications (TACK) qui simplifiera les communications radio entre les centres de lutte contre les incendies.

Autres faits concernant le Centre de surveillance et de lutte contre les incendies pour 1982-1983

- Il y a eu 1 396 incendies de forêt en Ontario mais on n'a perdu que 3 981 hectares de forêt.
- Le directeur du Centre s'est rendu en Chine populaire pour entreprendre une étude commanditée par l'Agence canadienne de développement international (ACDI) à propos d'une aide éventuelle à ce pays pour la lutte contre les incendies.
- Le ministère a envoyé deux équipes provinciales de pompiers pour aider à lutter contre les incendies de forêt en Alberta. Il a prêté des avions-citernes au Manitoba, à la Saskatchewan et à L'Alberta et de l'équipement à la Colombie-Britannique.
- Le ministère a acheté deux avions-citernes lourds Canadair CL-215 avant le début de la saison des incendies de forêt.

Administration

En 1982-1983, le système d'appel téléconférence a joué un rôle important dans la réduction des frais de déplacement occasionnés par la décentralisation des services du ministère. Grâce à ce système, on a multiplié le nombre de réunions tout en limitant leur durée.

Dans le cadre de son programme à long terme de traitement de l'information, le ministère a fait l'acquisition, en 1982, d'un mini-ordinateur qui est le premier à faire partie d'un réseau qui sera implanté dans toute la province.

Les services de l'Administration et du Contentieux ont organisé des ateliers et des colloques pour les employés du ministère qui sont préposés à l'embauche d'entrepreneurs privés pour la réalisation de projets spéciaux.

Les changements apportés au programme d'action positive ont permis au ministère d'offrir à son personnel féminin des chances d'emploi égales en restructurant et diversifiant les postes occupés par des femmes. En 1982, les objectifs d'embauche et de promotion que s'était fixés le ministère ont été atteints à 100 pour cent.

Les communications ont pris une importance particulière au cours de cette année budgétaire. Des plans de communications ont été développés pour la majorité des projets de l'ensemble du ministère.

Les services en français ont été renforcés et améliorés par l'embauche d'un coordonnateur à plein temps et d'un rédacteur-réviseur francophone.

A l'automne 1982, le ministère a lancé son magazine "Landmarks", la première publication depuis 10 ans dévouée aux programmes du ministère.

Dans ses activités, le ministère des Richesses naturelles est associé à un certain nombre d'agences, de conseils et de commissions. Ces liens sont basés sur la gestion des ressources naturelles et varient d'un organisme à l'autre.

Ensemble du personnel du MRN

31 mars 1983	Permanent	Non classifié	**Total**
Bureau principal	917	318	**1 235**
Bureaux régionaux et de district	3 387	1 062	**4 449**
Total	4 304	1 380	**5 684**

Selective Harvests, Mild Winters Good for Deer

Ontario's deer population is a valuable natural resource and MNR must manage it carefully to ensure a balanced number of animals. Too many deer in an area will overstress habitats and food supplies. Too few deer means that the herds need to be given time to increase.

MNR took steps to balance Ontario's deer herds by introducing a selective harvest program in 1980. The program controls the number of antlerless deer and fawns which can be hunted in areas where the population is overstressed by hunting and habitat deterioration. Reports from observers indicate that efforts are already having an effect. In 1982-83, hunters and non-hunters alike reported seeing more deer in central and Northern Ontario, where the deer herds had previously been severely reduced. Encounters with deer were up about 30 per cent in MNR's Algonquin Region alone during 1982-83.

But MNR doesn't take all the credit for the increase in the deer population in these areas, as nature co-operated in 1982-83, as well. One of the mildest winters on record helped to keep deer mortality low in 1982-83.

On Bears and Models and the Future

What will Ontario's bear population be like in the year 2000? Thanks to the 20th-century equivalent of the crystal ball—the computer model—the answers to questions about the future of Ontario bears are beginning to become available.

Until recently, not much was known about bears—aside from their voracious appetites, their long winter hibernations and the fact that sportsmen hunted them. But in 1969, MNR began a long-term study to learn more about the population dynamics and life history of black bears.

MNR scientists discovered that bears are much more sensitive to hunting than other species because the bears mature so slowly. At their maximum level of productivity, female black bears produce only 1.1 bear cubs per year—a level of reproduction which is low when compared with other popular game species such as deer and moose.

Predictive ability in wildlife management—as in any science—is very important. In order to say whether a species is being over- or under-harvested, a great deal of information must be accumulated. This is then studied to find trends and patterns. The black bear study enabled MNR's researchers to build up a significant data base—information valuable to the better management of the species in Ontario.

MNR's black bear computer model tells ministry specialists what percentage of the bears can be harvested—and when—without overstressing the population. Also, if it is known exactly how many bears are harvested each year, the computer becomes a useful planning tool to assist in making management changes when they are needed.

Better information on how many bears are harvested each year is now being acquired from the hunters themselves. They provide MNR with the premolar teeth of harvested bears. The age information obtained from the examination of the teeth will then be fed to MNR's computers. This research is helping to ensure that the future of the bear population of Ontario will continue to be bright.

Today's COs: Conservation Management Specialists

Today's Conservation Officer (CO) is not just a law enforcement officer or a game warden, although it's true that a CO does both of these jobs. A CO is really a specialist in outdoor conservation management—MNR's chief liaison agent between the ministry, the public and other agencies in the field. Conservation Officers help other agencies search for lost children and hikers, investigate serious crimes, help stranded hunters, and much more besides. The COs provide public information on Ontario's outdoor recreation resources. The officers also enforce the laws governing the use of those resources.

Much of a CO's time is spent on the enforcement of Ontario's fish and wildlife legislation, as well as other federal and provincial statutes. In 1982-83, conservation officers contacted over 336,000 people in enforcement activities. In all, nearly 11,000 charges were laid, which resulted in over 9,600 convictions. COs issued formal warnings to another 11,000 to 12,000 people. The total amount of fines assessed in 1982-83 in connection with the charges made by COs was $772,052, with 265 cases still pending on March 31, 1983. So enforcement plays a big role in a CO's job, but it's not the whole story.

MNR Librarians Use Computers to Aid Research

One of the advantages of the new computer technology is that it can be used to take some of the drudgery out of library research. MNR librarians at Main Office and at Maple are now doing computer-assisted information searches more and more.

The libraries have access—by computer terminal—to 200 worldwide data bases, containing information on just about every academic discipline imaginable. What used to be referred to as "looking something up" is increasingly being referred to as "accessing the data base".

In 1982-83, MNR librarians performed dozens of computer-assisted data searches for foresters, biologists and other resource managers on such topics as the re-ingestive habits of the snowshoe hare; the use of carbon dioxide in greenhouses to stimulate plant growth; the legislation that exists throughout the world on nature preserves; the toxic effects of acidity on fish species; and the lifestyle and habitats of the arctic fox, to name just a few.

By tapping into a computerized data base, MNR librarians can uncover articles on almost any topic in almost any scholarly publication in the world. A computer search is much faster than traditional methods, and librarians can check the contents of thousands of periodicals and journals in a matter of minutes. The system can even print out abstracts.

Computerized data bases are causing a revolution in library research, and this new technology is making the research tasks of MNR's managers easier, faster and more efficient.



Fisheries

1982-83 Fisheries Program Highlights

- In 1982-83, MNR fish hatcheries produced 6,312,000 fish.
- A total of 3,140,000 fish were stocked into the Great Lakes during the year.
- Since 1979, 4,130 water samples from 2,875 sites have been analysed to determine the susceptibility of Ontario's lakes to acid deposition.
- In the 1982 calendar year, Ontario's commercial fishermen harvested nearly $37-million worth of fish, or some 34,110,293 kg.
- Under the Community Fisheries Involvement Program, some 3,300 work-days of volunteer labor were provided for the 22 approved projects.

Left: Ontario's commercial fishing industry harvested $36-million worth of fish in 1982.

Growing Public involvement in Fisheries

During 1982-83, hundreds of Ontario anglers and outdoor enthusiasts donated time and labor to maintain and improve the province's fisheries. Under MNR's Community Fisheries Involvement Program (CFIP), a total of 22 projects—for habitat improvement, stream rehabilitation, MNR facilities improvement, and more—were approved during the 1982-83 fiscal year.

The program is a unique opportunity for public and government to work together. MNR offers expertise and assistance for the CFIP projects and the public volunteers time and labor, or donates equipment to the ministry for projects such as the renovation of fish culture stations or the transportation of fish for stocking.

In 1982-83, an estimated 3,300 work-days of volunteer labor were provided for the 22 approved projects.

Interest in CFIP continues to grow among private angling groups. Many community fisheries improvement projects have been submitted for MNR approval. And, to publicize the program more effectively, the ministry produced a new exhibit, a pamphlet, and an audio-visual show during 1982-83. By the end of the fiscal year, a new, detailed stream improvement manual, authored by MNR's fisheries specialists, was nearing completion.

CFIP Rebuilding Ringwood Fish Culture Station

Thanks to the CFIP initiatives, MNR's Ringwood Fish Culture Station received extensive alterations during 1982-83. The work was made possible by approximately $100,000 worth of equipment and materials donated by the Toronto Star's Great Salmon Hunt and the St. Catharines Game and Fish Association.

The remodelling and modifications to Ringwood Station included adding wells and aeration and cooling equipment to improve water quality and quantity. The expansion increased the incubation and early rearing capacity of the station. Other facilities are under construction.

The station will now be able to produce more and healthier coho and chinook salmon. When the work is completed, the station will be able to provide all of MNR's stocking targets for both coho and chinook salmon—some 250,000 coho yearlings and 450,000 chinook fingerlings a year.

Modernizing Ontario's Commercial Fishery

Managing Ontario's $36-million commercial fishery is an enormous responsibility. It can also be a very tricky business. Incomplete information about Ontario's annual fish catch can lead to decisions which can cause too many fish to be harvested or allow valuable business opportunities to be wasted. At present, MNR recognizes a need to improve its ability to assess the commercial fish catch. Also, the ministry is not satisfied with the present system of commercial licensing in the industry. For its part, the industry has acknowledged a number of problems that have to be dealt with.



The ministry and the industry agreed to work together on a plan to modernize the commercial fishing industry in Ontario. A joint MNR-industry committee—the Committee on Modernizing Ontario's Commercial Fishery—was given the task of developing appropriate methods for commercial licensing and harvest control. In April, 1982, the committee delivered its recommendations to the ministry in a report.

The report recommended modernization and improvement of MNR's ability to predict the fisheries resources; improved harvest regulations; and updating and streamlining of the commercial fisheries licensing procedure. The main thrust of the report was a recommendation to change the basis of commercial fishery assessment to a quota-per-licence system.

In January of 1983, the Minister announced that the majority of the committee's recommendations would be implemented. With continuing dialogue and much hard work, the important task of modernizing the commercial fishing industry in Ontario has begun.

What to do when it Rains Cats and Dogs . . . and Acid

The full effects of acid rain are not yet known. The Ministry of Natural Resources is vitally interested in acidic precipitation's effects on Ontario's fisheries. Similarly, the Ministry of the Environment is constantly seeking information about how acid rain affects water chemistry and the lower forms of life. The two ministries have become involved in a co-operative study of the effects of acid rain.

The results of the study will help scientists to determine whether acidic lakes can be rehabilitated, whether lake trout stocked in rehabilitated lakes will reproduce naturally, and whether acidification can be mitigated in extremely sensitive lakes. Small inland lakes are being studied, as their sport fishing potential is in the most serious jeopardy.

Boland Lake, near Sudbury, has been studied intensively for one year. A test to neutralize the lake's acidic content is scheduled for 1983. Once the acidity of the lake has been reduced, MNR will stock it with lake trout to determine whether the species will reproduce in the rehabilitated lake. Miskokway and Trout Lakes, both classified as extremely sensitive, underwent the first year of a projected two-year intensive study in 1982-83, to test the feasibility of using lake neutralization to protect these lakes' sport fisheries.

Other highlights of the 1982-83 fiscal year included the development of computer models of a small lake's response to acidification; a collaborative study with the federal Department of Fisheries and Oceans of four Precambrian Shield lake chains; trend-through-time acidic precipitation studies of twelve extremely sensitive lakes; and toxicity studies on the effects of pH-level reductions on young smallmouth bass.

Fisheries Special Employment Program Helps the Birds, too

During 1982-83, the fisheries special employment program approved 94 projects, and provided 677 laid-off workers with 10,101 work-weeks of employment. The program was part of a special MNR-Canada Employment and Immigration Commission (CEIC) employment plan, and more than $4.5-million was spent on fisheries projects in 1982-83. Because of the program, many fish and wildlife management jobs which needed to be done, but which would never have been undertaken without the program, have been accomplished.

The projects included the improvement of fish habitats; the removal of watercourse debris; the assessment of MNR stocking activities; creel censuses; population studies of lake herring and rainbow smelt; commercial fish monitoring; collection of data on the Ontario baitfish industry, and much more.

Fish weren't the whole story—the program helped wildlife management, as well. Under the fisheries program, many wildlife management projects were undertaken. Deer management, habitat improvements for waterfowl, studies of how logging affects moose populations—these and other wildlife projects were also part of the program's benefits.

As was the case with the special employment program in the forestry, provincial parks, minerals, and conservation authorities sectors, the fisheries program took advantage of Section 38 of The Unemployment Insurance Act. Ontario's share of the cost was provided by the Board of Industrial Leadership and Development (BILD). MNR administered all the projects, and provided advice and equipment.

It's Good Times for Ontario Brown Trout

The brown trout—one of Ontario's best fighting fish—is making a comeback thanks to MNR's fisheries management



Left: An estimated 3,300 work days of volunteer labor were provided during 1982-83 for the 22 approved projects under MNR's Community Fisheries Involvement Program.

Right: Scientists at MNR's Southern Research Station in Maple search for new ways to develop the potential of Ontario's resources.

activities. The brown trout, originally a fish native to Europe, was first introduced to Ontario in the 1800s. But since the early 1960s, when the brown trout was implicated as a disease carrier, it hadn't been stocked in Ontario. The brown trout has now received a clean bill of health, and that's good news for Ontario anglers.

Brown trout now exist in the Credit River, the Sydenham River near Owen Sound, and in the Ganaraska River near Port Hope. To augment the fish's population in Ontario, MNR stocked 71,000 brown trout fingerlings in the fall of 1982 in Lake Ontario, in Summit Lake, and in the Ganaraska and Sydenham River systems. In the spring of 1983, the same areas were stocked with 139,000 brown trout yearlings. The stocking programs were in response to requests from anglers and sports clubs throughout southern Ontario.

Through the Community Fisheries Involvement Program (CFIP), fishing clubs are undertaking projects to create spawning beds and nursery habitats for the young fish. MNR's aim is to establish naturally-reproducing communities of brown trout. The expected population increase is very good news for anglers.

A Tale of Two Fishes—Splake and Lake Trout Backcross

In the early 1950s, the lake trout population of the Great Lakes went into a severe decline. One reason for this was that sea lampreys were killing off the fish before they could spawn. A sea lamprey control program was introduced, and it has been quite successful.

The plight of the lake trout rekindled interest in splake—a hybrid fish produced by crossing a brook (speckled) trout with a lake trout. MNR scientists wanted to produce an early maturing, fast growing trout which could live in the depths of the lake which the lake trout formerly inhabited.

Hybrid splake have been developed which have a broader range of genetic material than the parent species, and selective breeding can develop strains of fish with special characteristics. For example, certain strains of splake have been developed for stocking in inland lakes—lakes which are not necessarily best suited to either brook trout or lake trout.

MNR researchers have also experimented with breeding splake back to the parent species—and have had considerable success with a hybrid of a hybrid, known as the lake trout backcross. The backcross matures almost as early as splake and has the longevity of the lake trout.

Over the years, MNR has stocked both splake and lake trout backcross in the Great Lakes. Anglers are enthusiastic about the seasonal sport and eating qualities of both fish.

In 1982-83, MNR stocked Georgian Bay with 927,000 lake trout backcross—part of a total of 3,140,000 fish stocked in the Great Lakes last year.



Lands and Waters Management

1982-83 Lands and Waters Program Highlights

- MNR presented 20 District Land Use Guidelines in southern Ontario and 25 in the north.
- Five per cent of Ontario was mapped under the Ontario Basic Mapping Program. Large-scale mapping of nine municipalities was completed, and work began in 25 other centres.
- The Canada-Ontario Flood Damage Reduction Program spent $1.5-million on 38 flood-risk mapping projects.
- Southern Ontario's township boundary resurvey was completed. A total of 9,100 kilometres of township boundaries in Ontario have now been resurveyed.
- MNR's Resource Access program built 410 kilometres of roads and constructed four bridges, at a total cost of $16.5-million.

Left: Some 87 per cent of Ontario is Crown land, and MNR manages it for the benefit of all the people of Ontario.

Public Response helped MNR planners

Land use planning is a process to help make decisions about how the lands and waters of Ontario will be used. There are many land uses: recreation, mining, forestry, housing, industrial facilities and agriculture, to name just a few. All potential resource users—industries, outdoor groups, tourist operators, trappers, native groups and private individuals—have a stake in long-term land use planning. One of MNR's toughest problems is to identify the future uses of Ontario lands for the benefit of *all* potential users.

In 1974, MNR began work on its Strategic Land Use Guidelines program. The program was a first for Canada and one of the most comprehensive land use planning exercises of its kind in the world. During 1982-83, the ministry put the finishing touches on the District Land Use Guidelines for Ontario.

From April to August, 1982, the ministry held 140 open houses across Ontario, and presented the proposed district land use guidelines to the public. There were 25 guidelines for Northern Ontario and 20 for southern Ontario. At the open houses, more than 10,000 people came to ask questions and get answers from MNR staff. MNR also received 10,000 comments, cards, briefs, letters and other written submissions on land use planning from the public and from special interest groups. This information was invaluable to the ministry in completing its final land use guidelines.

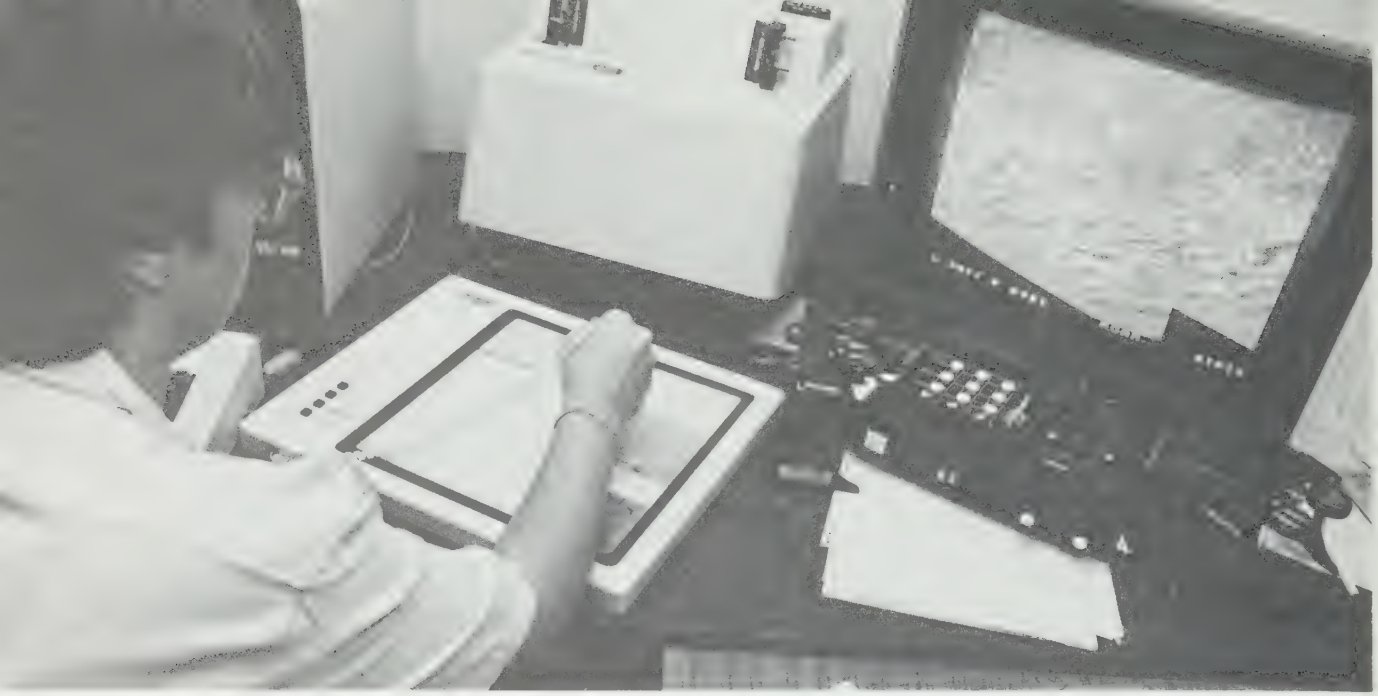
Ontario Basic Mapping Program in Fifth Year

A traditional criticism of map-making—or cartography—has been that some maps are less accurate than others. In fact, no map can be completely accurate, since it is a flat representation on paper of the curved surface of the earth. There are maps of Ontario now in use which vary as much as two-fifths of a kilometre in distance and up to 30 metres in altitude.

The Ontario Basic Mapping program was begun in 1978 to produce a provincial set of basic maps *without* such discrepancies. Based on the Universal Transverse Mercator (UTM) grid system, the basic maps are as accurate as modern maps can be, because every point on the map has its own unique mathematical co-ordinates.

The maps—produced at different scales and levels of detail—contain topographical information which is valuable to government and industry: elevations, contours, watercourses, water bodies, roads, railways and buildings. The information on the maps can be used for land planning, emergency planning, for environmental projects and transportation routes.

During 1982-83, the Ontario Basic Mapping program finished mapping an area comprising five per cent of the province. By March, 1983, 15 per cent of Ontario and 80 municipalities had been completed. The area which is now mapped covers eastern Ontario, the Niagara Peninsula, and a strip of land across the southern portion of Northern Ontario. All the mapping was done by private companies under contract to the ministry.



Geographic Referencing Seminar Held in December

Since 1974, MNR has been working on a system to incorporate all the available land information in Ontario into a standardized mathematical grid. The system will assign fixed co-ordinates to such things as telephone cables, pipelines, sewers, property and buildings, to permit land use planners and other specialists to have a standard, integrated reference system. Identifying a piece of information according to where it is located is what's known as geographic referencing—a rapidly-developing field in which MNR is playing a leading role.

In December, 1982, the Ministry of Natural Resources and the Interministerial Committee on Geographic Referencing co-sponsored a two-day conference, called "The seminar on Land-Related Information Systems—Municipal/Provincial Integration".

About 200 participants registered for the conference, many of them from municipalities: mayors, municipal engineers and planners, surveyors and other interested officials. The conference participants learned about the latest computerized land-related information systems available, and about what the provincial government has been doing over the last few years in the field of geographic referencing technology.

Township Boundary Resurvey Completed in Southern Ontario

The first township boundaries in Ontario were surveyed in the Kingston area, in the late 1700s. Much of the area was still wilderness, and the early surveyors had to battle with what today seem almost insurmountable difficulties as they drove their wooden surveying posts into the ground. In fact, surveyors didn't start to use the familiar iron bars of today until about 1903. Many of the original wooden surveying posts marking Ontario's township boundaries have deteriorated as a result of time and elements. And accurate township boundaries are important to land planners and to all those involved in the development and management of the province's resources.

Several years ago, MNR began a program to resurvey all the township boundaries in Ontario. In December, 1982, the resurvey program was completed for all of southern Ontario. It includes all the area south of the French and Mattawa Rivers, a total of about 4,500 kilometres of township boundaries – more than the distance between Toronto and Vancouver.

In Northern Ontario, where the rugged Canadian Shield limits agriculture, roads and fencing, surveying work is more difficult, but MNR completed another 300 kilometres of township boundary resurveying in 1982. The provincial total of resurveyed boundaries is now just over 9,100 kilometres. All the surveying work has been completed by private surveyors under contract to MNR.

BILD Grant Expands OCRS Facilities

In April, 1982, Ontario's Board of Industrial Leadership and Development (BILD) announced a grant of $3-million to MNR's Ontario Centre for Remote Sensing. The grant was for the upgrading of computer equipment and the development of an expanded technical training program aimed at researchers and industry.

In 1982-83, OCRS spent $600,000 of the grant on the addition of three work stations to its computer system, bringing the number of work stations to four. The system now has extra storage capacity, and can accommodate four people working on it simultaneously. The system at OCRS—second-largest of its kind in the world—is available to governments, industry, educational and research institutions.

OCRS also worked in 1982-83 on a training program to instruct non-OCRS staff on the operation and applications of the equipment. Most of OCRS's clients need the facilities only periodically—for forest inventories, agricultural surveys, and land use mapping, for example. Details on the training system at OCRS can be obtained by contacting the Centre's Chief Scientist.

Airborne TV Studio Takes Inventories, Makes Maps

Everybody knows about aerial photographs—well, almost everybody. And almost every TV news show uses film or videotape which is shot from the air. But videotaping for resources management? That's what MNR is doing, with the help of the Ontario Centre for Remote Sensing.



Left: At the Ontario Centre for Remote Sensing, scientists are developing new uses for remote sensing technology.

Right: MNR's Streamflow Forecast Centre helps the ministry predict floods.

OCRS has been studying the many advantages of making videotapes from helicopters for agricultural land use surveys, forest regeneration studies and wild rice field management. In 1982-83, the first-ever aerial videotapes were made to assess the habitats of trout streams. And OCRS discovered that, for some applications, videotape is better than aerial photography.

Videotape doesn't provide as much detail as aerial photos. But tape can be watched—on a monitor—as it is being made. So the picture quality on tape is never in doubt. Tape can also be played back as soon as it is made. And when the subject matter is old and no longer needed, the tapes can be reused to record new information. Tape's zoom and freeze-frame features make it a more versatile medium than traditional photographic film.

OCRS has used videotape to make maps and inventories of the types of land uses in Ontario. So if you think you see an airborne TV studio, don't panic; it's not a close encounter of the third kind—it's probably another one of OCRS's innovative experiments.

Satellite Maps Help Find Energy Resources

How many peat deposits are there in Ontario? Two different parts of the ministry—the OCRS and the Ontario Geological Survey (OGS)—worked together on that question during 1982-83.

OCRS has developed a technique for mapping wetland areas—where peat deposits are often found—by using data obtained from a LANDSAT satellite, hundreds of miles above the earth. The OGS staffers co-operated on a sampling project in 1982-83—checking the peat deposits at selected wetland sites throughout Ontario. OCRS is looking for a way to measure depth and decomposition rates of peat, and to discover how to estimate the volume and quality of the deposits. If natural resources specialists could conduct peat inventories from satellite data, the process would be much cheaper and faster than at present.

OCRS maps use a color-coded legend to indicate what is on the ground: forests, pasturelands, wetlands, wild rice fields—even forest fires. The maps are produced in a standard format, which includes place names, water bodies, and latitude and longitude references. The computer-produced maps can be made more cheaply than by using traditional methods, and can be updated rapidly.

Scientists around the world have expressed great interest in the OCRS technology, which can also be used for other studies—differentiating agricultural crops, for example, or indicating the success of coniferous forest regeneration on cutover or burned areas.

Crown Land Use Permits for Winter Sports Clubs

Across Ontario, many winter sports clubs maintain snowmobiling and cross-country skiing trails on Crown land. In September, 1982, MNR announced a new policy to allow the clubs to manage the use of the winter trails, and to charge a fee for the use of the trails, if they wish.

The clubs became responsible for the full cost of maintaining the trails in 1981-82. The new land use permit policy was introduced to give the clubs some management control over the trails they maintain. It was also expected to increase clubs' revenues and boost their memberships.

On trails that cross private land, clubs can manage the use of trails, and can also charge a fee if they wish—but only with the landowner's permission.

The ministry made limited funding available in 1982-83, to help clubs meet the initial costs involved with putting the new policy into effect. And MNR also continued to maintain and operate trails in provincial parks across the province, as well as on some Crown lands.

New Crown Land Rental Policy Introduced

In March, 1983, MNR introduced a new rental policy for Crown land in Ontario. The ministry developed a policy to overcome inequities and discrepancies in the 25-year-old rental rates set out in The Public Lands Act.

Previously, rent on all Crown land was assessed at 10 per cent of the market value of the property. The new policy introduced a sliding-scale rental formula based on three criteria: the value of the land, the intensity of the proposed land use, and the security of tenure granted for the land use. Rent on cottages, recreational camps and community docks is now three to 12 per cent of market value. A long-term lease with an option to purchase, however, is assessed at the premium rate, because the security of tenure is greater.

The new rental policy affects all new leases, licences of occupation and land use permits, and applies to existing licences and leases when they come up for review. For 1983, however, any rent increases on existing leases and licences are limited to five per cent—the maximum increase prescribed by the Administered Prices Restraint Program.

Five Agencies Agree on Plan to Manage Ottawa River Basin

The first-ever Canada/Ontario/Quebec agreement on co-operative water basin management was signed by five government agencies in March, 1983. The agencies included Environment Canada, the Ontario Ministries of Natural Resources and Intergovernmental Affairs, and the Quebec Environment and Intergovernmental Affairs Ministries. The agreement was to provide flood protection along the Ottawa River while maintaining other water uses, including hydroelectricity.

The Ottawa River Basin has been the focal point of government concerns for years. Annual flood damage in the basin area is over $1.5-million. The river also provides municipal water supplies, recreation for about one million residents of Ontario and Quebec, and about $1-million worth of hydroelectric power daily. The basin was the subject of a six-year study to accommodate both flood control plans and other concerns, and the study ultimately resulted in the new agreement.

The agreement created a new water management board charged with developing long-term strategies for the management of the Ottawa River Basin.

New Ice Jam Management Publication

To help deal with ice-caused floods, MNR produced a new publication, *Ice Jam Management*, in November, 1982.

This publication came about because of an increasing number of requests from municipalities and conservation authorities for guidance and procedures in dealing with ice jams and the floods which they can cause.

The new publication contains sections on the history and trends of ice jam floods, conditions which cause floods, the kinds of ice formations that cause problems, and techniques for predicting breakups. It also offers advice on monitoring ice conditions, remedial measures and the principles of ice control. The 23-page publication can be obtained by contacting the ministry's Conservation Authorities and Water Management Branch at Queen's Park.

Lakehead Flood Control Project Nears Completion

For many years, inadequate channel capacity on the Neebing and McIntyre rivers has caused serious spring flooding in the downtown core of Thunder Bay. In 1981, a multi-year, $15-million project was begun to remedy the problem. During 1982-83, five new construction contracts were awarded, for a total of over $4-million. During the year, three bridges and some major portions of the channel were completed. On July 6, 1982, the rebuilt 110th street bridge was officially opened.

The Lakehead Region Conservation Authority expects that all the major construction on the project will be finished in 1983—one year ahead of schedule, and well within the allocated budget.

Final Stage of Wallaceburg Flood Control Project Approved

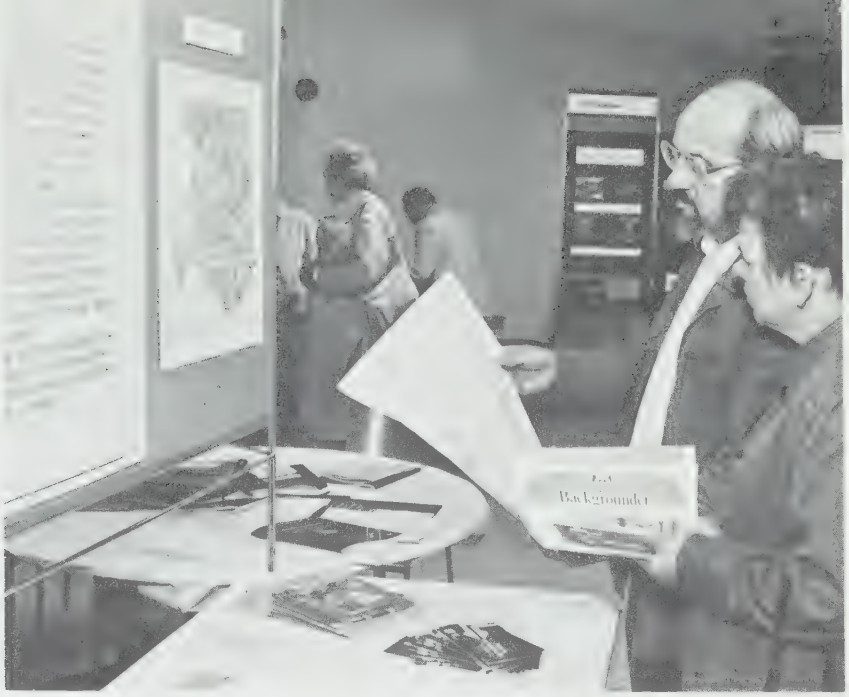
For years, recurrent flooding of the St. Clair River and its associated damages have plagued the residents of Wallaceburg. But not for much longer. In February, 1983, the Minister of Natural Resources gave the final approval to the St. Clair Region Conservation Authority to complete the W. Darcy McKeough Floodway project.

A seven-kilometre floodway channel has already been built between the North Sydenham and St. Clair Rivers. The next step is the construction of an earth dam across the Sydenham about 15 kilometres upstream from Wallaceburg. The last stage of the project will cost an estimated $14.8-million and involves the construction of the dam and flood control gates, roads and bridges, and land assembly.

When the dam gates are closed, flood waters will be diverted from the 5,000 homes and many businesses of Wallaceburg—a big relief for the residents of a town that has been flooded so many times in the past.

Brantford to Receive Flood Protection

Brantford is another flood-prone area of Ontario. Almost a quarter of Brantford is situated on the Grand River flood plain, and there has been severe flood damage in past years. Since 1978, MNR has been working with the Grand River Conservation Authority on a project to minimize the flood danger to the estimated 5,000 people who live or work in the flood plain.



Right: More than 10,000 people attended MNR's 184 open houses on strategic land use planning in 1982-83.

The project—scheduled for completion in 1989—consists of channel improvements, dike building and other associated works. The 1982-83 phase of the project cost $3.5-million, and involved land acquisition and major construction.

Hurdman Power Dam Gets New Lease on Life

The Hurdman Power Dam at Mattawa will soon be operating again. The dam, in disrepair since 1978, was purchased and partially reconstructed by the ministry in 1979-80. Before shutting down, the station produced up to 600 kilowatts of energy from its single turbine.

In March, 1983, the Minister of Natural Resources announced that Barber Hydraulic Turbine Ltd. of Port Colborne, was the successful bidder in a tender to lease the Hurdman dam and put it back into operation.

The dam will be leased to the private sector to produce hydroelectric power for sale to Ontario Hydro. The dam is the first site leased to a private company by MNR as part of a government policy to encourage the development of small-scale hydraulic power sites in Ontario.

Special Employment Program Aids Conservation Authorities

A special employment program jointly funded by the provincial and the federal governments provided much-needed temporary employment in 1982-83 through the conservation authorities across Ontario. A total of 76 projects were approved, providing 736 laid-off workers with 9,979 work-weeks of employment, at a provincial cost of $4,643,472.

The projects were sponsored by the conservation authorities and included such work as watercourse reclamation; stream rehabilitation; erosion control; rehabilitation of fisheries habitats; park improvements; and construction of boat ramps and fishing docks. Numerous wildlife projects were also sponsored by the conservation authorities.

The success of the five special employment programs of MNR and the Canada Employment and Immigration Commission was unprecedented. Provincial funds for the programs were provided by the Board of Industrial Leadership and Development.



Aviation and Fire Management

1982-83 Aviation and Fire Management Program Highlights:

- Ontario experienced 1,396 forest fires during 1982-83, but only 3,982 hectares of Ontario forests were lost.
- MNR sent two provincial fire teams to assist forest fire suppression activities in Alberta; loaned firefighting aircraft to Manitoba, Saskatchewan and Alberta; and firefighting equipment to British Columbia.
- The AFMC Director travelled to the People's Republic of China during 1982-83 to undertake a CIDA-sponsored study of potential fire management assistance to that country.
- Two Canadair CL-215 heavy waterbombers were purchased by the ministry for the beginning of the 1983 fire season.

Left: Less than 4,000 hectares of forest were lost to fire during 1982.

The 1982 Fire Season: Weather Made a Big Difference

Only 3,982 hectares of Ontario forest were lost to 1,396 fires in 1982. Two factors contributed to this low loss: favorable weather conditions and the extra preparedness of MNR's Aviation and Fire Management Centre (AFMC) staff.

Over the winter of 1981-82, AFMC staff—with the co-operation of the federal Atmospheric Environment Service—monitored the weather patterns and the long-term Ontario forecasts to see how much precipitation our forests were getting and to watch for trends in pressure systems and prevailing winds.

Near normal levels of precipitation, along with below normal temperatures, combined to produce a slow snow melt in the early spring of 1982. Long-range weather forecasts called for winter-like conditions to last throughout much of April—a critical month in the fire management calendar—and the forecasts were right. The 1982 fire season got off to a slow start and never developed the severe burning conditions of the past several years.

Being Prepared Helped, too

The long-range weather forecasts for Ontario in 1982 caused the Aviation and Fire Management Centre staffers to adopt a guarded optimism about the fire season. Nevertheless, they prepared carefully for the season—even more than in previous years. The extra preparedness was made possible by a fiscal shot in the arm—in the form of a $6-million budget increase to improve the province's firefighting and protection activities. The additional funding allowed MNR to increase the number of firefighting unit crews by 30 to a total of 175 permanent crews. Also acquired were additional heavy waterbombers (including a CL-215) and helicopters, bringing the Centre's fleet to nine heavy waterbombers and 17 helicopters.

The additional funds also helped MNR to improve its capabilities in several other areas, including fire detection, training, protection, equipment and technology.

Fewer Fires Meant Less Fire-Flying

The reduced fire activity of the 1982 season meant that MNR's firefighting aircraft flew less than usual, and that short-term leasing of additional aircraft was substantially lower than in the two previous years. In all, 77 aircraft were used during 1982 for fire management: 17 contract helicopters for fire attack; 19 contract aircraft for fire detection; and a total of 41 heavy waterbombers—a Canadair CL-215, eight Cansos, five Twin Otters, 13 Otters and 14 Turbo Beavers.

The CL-215 came from Canadair under a demonstration agreement. MNR used it for waterbombing and familiarizing pilots with the plane's operation. The aircraft is a state-of-the-art waterbomber. In a 10-second skim over a suitable lake or river, the CL-215 can scoop up 5,455 litres of water into its tanks, and remain



airborne for up to four hours without refuelling. During 1982-83, MNR signed an agreement with Canadair to purchase two CL-215 aircraft, which were to be delivered in time for the 1983 fire season.

The 1982-83 MNR aircraft operating year was by no means light, however. During the fiscal year, ministry-owned aircraft flew a total of 15,180 hours, on all kinds of government business—firefighting and protection, surveying, forest cruising, transporting MNR and other ministries' personnel, and mercy flights. The ministry also chartered privately-owned aircraft to fly more than 25,000 hours in 1982-83.

Improving Fire Management in Ontario

Over the years, fire management in Ontario has evolved into a policy of total suppression—an attempt to suppress all fires, in Ontario forests, at all costs. Looking at the overall picture, MNR's fire management planners realized that this policy was both impractical and uneconomical. There are only so many resources that can be mustered to fight forest fires, and there are times when those resources have to be stretched to do the job.

MNR's foresters know that, like sunlight and rainfall, fire is an important part of the ecological cycle. Put simply, not all forest fires are bad. In fact, they play an important part in the natural regeneration of a forest.

With these things in mind, the MNR Fire Management Improvement Project (FMIP) was begun in 1980 to develop an improved fire management system for Ontario—to develop a plan, and to implement it. FMIP entered its final phase in 1982-83, after MNR's corporate fire management policy received approval in May, 1982.

The new policy outlined the basic principles, definition, roles, relationships, responsibilities and overall objectives of the ministry's fire management activities. As well, the policy stated three objectives for the MNR fire management program: to prevent loss of human lives, personal injury, and social disruption caused by fire; to ensure that fires have a minimal effect on public works, private property and natural resources; and to use the natural benefits of fire to achieve MNR objectives for land and resource management.

The thrust of the policy is to ensure that MNR's forest firefighting capabilities continue to be efficient, up to date, and effective.

Educating the Public About Forest Fires

Even though forest fires are perfectly natural, not all of them are caused by lightning. Sadly, many fires are caused by humans—sometimes those who love the forests the most. All human-caused fires are preventable, especially if the people who live, work and play in the forests are educated about the many ways to prevent forest fires. AFMC staff worked during 1982-83 on an improved fire prevention program which they hope will help to prevent many of Ontario's human-caused fires.

The new prevention system includes the following components: a marketing study to determine the best ways of getting fire prevention information to the target audience; a communications plan to devise objectives, target audiences, formulate messages and estimate probable costs; and built-in monitoring capability to allow the ministry's fire managers to tell whether their prevention measures are effective, or whether the system needs changes.

The new prevention program also includes a school component and a catalogue of useful fire prevention materials, and should enable MNR staff to do four things: determine the preventable fires which have the highest impact on our forests; design a prevention program tailored to a specific audience; monitor the success of their efforts and plan any necessary revisions to the system.

Centralizing Ontario's Forest Firefighting Efforts

Because of the rapid developments in information technology, centralized computer systems can and are being used more and more to assist fire managers in making the crucial decisions on fire suppression strategies. These computer systems are located in the five MNR Regional Fire Centres: the headquarters of the ministry's firefighting efforts across Ontario.

Tests of this centralized approach to fire management were carried out in MNR's Northern Region in 1982. The results were very encouraging. It improved the use of the highly mobile water-bombing and initial attack aircraft, thus helping to make the ministry's firefighting operations in the region swift

and efficient. A crucial component of MNR's initial attack strategy is to allow aircraft to ferry MNR fire crews and equipment to the fires quickly, enabling them to contain the fires before they get out of control.

Working with Industry to Control Fires

For two years now, MNR has been working with the Ontario Forest Industry Association (OFIA) to train forest workers to fight and to control forest fires. The industry has taken on increased responsibility for fire prevention and suppression, and is sending future trainers to MNR for instruction in fire management. Such a training program is logical because industry staff are often closest to a fire, and in the best position to contain it before MNR firefighting crews can get to the scene.

During the two years of the co-operative training program, several hundred forestry workers have received firefighting and prevention training, thanks to MNR instructors and the industry instructors whom the ministry trained. In the spring of 1982, AFMC staff conducted Initial Attack Fire Boss courses for 66 supervisory personnel attached to 10 different forest companies.

By the end of the 1982-83 fiscal year, the forest operators in Ontario had developed improved fire plans—plans detailing what contingency measures would be taken in the event of a forest fire. Together, the companies' fire plans and the firefighter training sessions will make industry-MNR fire management operations more effective.

Fire Management Enters the Technological Age

MNR runs a sophisticated fire management program, using dozens of aircraft, hundreds of highly skilled personnel and the best possible equipment. But this is the Information Age—the age of the computer—and the Aviation and Fire Management Centre is taking further advantage of many of the benefits that the new technology has to offer.

Unlike other resource management areas, many fire management activities are necessarily reactive—based on the characteristics of each new fire. Every fire is a separate entity and the special nature of each fire gives rise to a different set of needs. Modern information technology can help fire managers prepare for emergencies in advance, and help them make crucial strategy decisions more quickly when a fire breaks out.

When a forest fire is raging, every second is precious to the people whose job it is to decide what to do about it. Hundreds of factors must be considered —local populations and businesses; the location, size, and scope of the fire; the wind, the temperature, and the dryness of the forest; the history of previous fires in the area; and the resources available to deal with the fire. Computers are ideally suited to sorting through information like this at speeds far in excess of the human brain. Computers can't make the decisions, but they are a big help to the managers who do.

AFMC's Decision Support System study investigates the uses to which computer technology can be put in the management of fire. During the 1982-83 phase of the study, the Northern Regional Fire Centre in Timmins was linked to the computer system at the Petawawa National Forestry Institute in Chalk River. MNR fed the computer all the available historic fire occurrence data for Northern Region. Now the ministry can use the data to develop a computer prediction system for human-caused fires and lightning strikes.

Aviation and fire management staff also worked on computer models which will assist fire managers to allocate resources, and to reach a better understanding of the way fires develop from tiny blazes into huge conflagrations. Another development in 1982-83 was a computer-based simulation model of Ontario's initial attack fire suppression system. The model is called the Initial Attack Aircraft Study, and is being used to help make decisions about MNR's aircraft fleet—its deployment, its effectiveness and its future composition.

Lightning Doesn't Have to Strike Twice

Lightning strikes caused at least 230 forest fires in 1982—fires which burned about 40 per cent of the total forest area lost during the year.

Since 1978, MNR has been testing a lightning locator system in Northwestern Ontario—with excellent results. During 1982, the ministry decided to expand the system to its Northern and North Central Regions. By the beginning of the 1983 fire season, the Regional Fire Centres in Dryden, Thunder Bay, Timmins and Sudbury were to have access to lightning locations—shown on up-to-the-minute lightning distribution maps which reveal cloud-to-ground lightning strikes.

The lightning maps will assist staff to monitor storm locations, plot detection routes for aircraft and move initial attack resources to fire zones.

Radio Waves Help Put Out Fires

Although MNR is using some of the latest micro-computer technology in fire management, one of the oldest forms of electronic technology—radio—is alive and well and helping the ministry's fire managers do their jobs more effectively. It's hard to exaggerate the importance of good communications in the fire management process. Field crews have to speak by radio to the main base of operations, to each other, and to the fire suppression aircraft operating in the same area. And, until recently, all three groups fighting a fire had to use the same radio frequency, one that was allocated to the particular fire.

That often meant more than 20 aircraft and many ground personnel were all trying to use the same radio frequency. To eliminate confusion, MNR designed a special communications kit especially for firefighting: the Tactical Action Communications Kit (TACK). The kit comprises small, hand-held radio units, a system of pocket pagers, and relays, using either six or eight assigned channels.

The TACK kits permit a small radio network to be set up on special frequencies, so that several firefighting units can each have a private channel for interference-free operation. Extra channels are built into the system so that the ground crews and aircraft can talk to their base when necessary.

During 1982-83, radio repeater stations were established in Quetico Provincial Park, and in the Hearst, Kirkland Lake and Nipigon Districts of MNR. Radio linking systems were installed last year at MNR's Thunder Bay, Geraldton and Nipigon Districts, and in Algonquin Region. The systems extend VHF radio coverage beyond the normal ranges. The Thunder Bay system covers an area north into timber territory near Holinshead Lake. The Geraldton system covers an area northward to the Albany River forest.

Left: The Canadair CL-215—the plane can scoop up 5,455 litres of water into its tanks in just 10 seconds.



Administration



Left: Keeping the public informed is one of the most important duties of MNR staff.

Right: MNR program and administrative staff attended hundreds of public meetings and information sessions, and fielded thousands of questions from the public during 1982-83.

MNR Strategic Information Processing Plan Under Way

High-speed computer technology is now an accepted, everyday part of business life in most places. Computers are helping government to process information thousands of times faster than in the past, and more cheaply and efficiently. Since 1980, MNR has been developing a long-term strategy to co-ordinate all of its information processing operations—to ensure that the equipment it acquires can be incorporated into a ministry-wide information network. The strategy is known as SIPP—the Strategic Information Processing Plan.

In October, 1982, the Management Board of Cabinet approved the acquisition of a mini-computer at MNR's Main Office and a micro-computer link in Timmins—the first acquisitions in the eventual ministry-wide information handling network.

The ministry is now studying all its information processing needs. During the next few years, MNR will develop a co-ordinated strategy for information processing, so that the information needed by line managers to function effectively will be readily available.

Teleconferences Cut Travel, Accommodation Costs

Because of MNR's decentralized structure—47 districts and eight regional offices across the province—staff members of various technical and management committees may have to put in a great deal of travel time. A most effective alternative to committee meetings, however, is the teleconference call—a meeting where people get together over the telephone. And more and more MNR committees are using teleconferencing to cut costs.

Teleconferencing saves money because a telephone meeting requires no travel or accommodation expenses. Teleconferences can be arranged quickly, and the meetings can be shorter and more frequent.

During 1982-83, teleconferencing was one of the important tools used by MNR managers to cut committee costs. Almost every other Executive Management Committee meeting, for example, now uses speakerphones to connect Main Office staff with staff in Maple and Thunder Bay.

New Energy Handbook Produced

The Ministry of Natural Resources manages approximately 4,000 buildings, representing some 185,800 square metres of floor space. The buildings range from office complexes to park comfort stations, from tree seed depositories to fish culture stations, so energy requirements differ widely. And energy is expensive. To help its building managers save on energy consumption, MNR produced a handbook on energy conservation during 1982-83.

Funded by the Ministry of Energy, the new handbook is titled *A Handbook: Energy Conservation in Ministry of Natural Resources Buildings*. The handbook contains sections on several energy-saving techniques: energy management, low-cost and no-cost conservation measures, sample energy budget and audit calculations and reference material.



Contracting Workshops/ Seminars Helpful to Managers

Managers at MNR are using private individuals and companies more and more to help accomplish the ministry's program objectives. Because MNR staff are continually involved in managing such contractual relationships, the Administrative Services and Legal Services Branches co-operatively presented a series of contracting workshops and seminars to ministry staff in 1982-83.

The courses dealt with the tendering process, drafting contracts, using consultants and administering contracts, among other things. Over 300 staff members attended the sessions, which were held in all eight MNR regions throughout the province. The participants got an opportunity to hone their skills and to exchange their views and experiences in contract management. The workshops and seminars are currently being refined and partially redesigned, and will be offered in the next fiscal year to specific target audiences within the ministry.

Total MNR Staff

March 31,1983	Regular	Unclassified	**Total**
Main Office	917	318	**1,235**
Field Offices	3,387	1,062	**4,449**
Total	4,304	1,380	**5,684**

After Seven Years, There've Been Some Important Changes

The Affirmative Action Program at MNR has been in existence now for seven years. During that time, impressive changes have occurred—both within MNR and in the program itself. All the changes have contributed to the program's long-term goal—to achieve equal opportunity for women Crown employees by raising and diversifying their occupational status.

Thanks in part to affirmative action, the wage gap between male and female employees of MNR has decreased by 7.3 per cent since 1975. That's quite an improvement in itself. Also since 1975—when the Affirmative Action Program began—the percentage of women employees in MNR's Administrative Module has grown by more than 250 per cent and in the Administrative Services category by about 125 per cent.

During 1982-83, 100 per cent of MNR's total number of hire/promotion targets were met. The ministry's managers provided 48 women with accelerated career development assignments. Since 1980, when Accelerated Career Development was formally introduced throughout the government, MNR has continually surpassed the minimum government requirement set by Management Board.

MNR achieved several important first-ever appointments in 1982-83. These included the first female Manager of Compensation and Staff Relations, the appointment of a woman as Manager of Information Services in the Communications Services Branch, and the appointment of MNR's first female Regional Director (to be effective in 1983-84).

MNR women have also achieved significant progress in the scientific and technical categories. At the end of March, 1983, MNR's classified staff included eight female foresters, 10 biologists, 10 community planners, two geologists, three geological assistants and 28 resource technicians. In addition, there were many other women working in these positions as unclassified employees. The 1982 Junior Ranger Program hired women for 44.8 per cent of the available positions—compared with 28.2 per cent in 1975.



Left: At the BILD Show, in February, 1983, MNR featured displays of some of the many programs that are assisted by the Board of Industrial Leadership and Development.

Right: During the Affirmative Action Program's first seven years, women gained increasingly important roles in the ministry's scientific, technical and administrative categories.

Affirmative Action Program Changes with the times

During 1982-83, the Ministry of Natural Resources reviewed its affirmative action program intensively. The review led to the distribution of an affirmative action policy paper to MNR managers across Ontario in August. Managers gave it widespread support, and a number of changes to MNR's Affirmative Action Program were made.

The two-pronged thrust of the changes was to define affirmative action's role in MNR more clearly and to incorporate affirmative action into regular management processes. Line managers are now accountable for the implementation and results of affirmative action policies. A temporary implementation committee was formed, which was composed of MNR managers from across the province. By the end of March, 1983, the committee had made recommendations concerning ways of blending affirmative action policies and procedures into the ministry's work program planning and performance monitoring systems.

The new policy means that affirmative action has become manager-centered—a significant change in approach from the two-tiered, centrally-directed network of Affirmative Action Representatives which had been in place since 1977. During 1982-83, the representative network continued to be in place, but it is now being phased out as MNR's line managers assume responsibility for affirmative action.

Throughout the 1982-83 fiscal year, MNR's Affirmative Action Representatives organized 14 workshops, which were attended by 353 MNR employees. The workshops were on topics such as stress management, communications skills and office technology. The reps also organized field trips to MNR operations centres such as tree nurseries, fish hatcheries and provincial parks, which gave female employees a first-hand look at the wide range of ministry activities.

Ministry of Natural Resources
Organization Chart 1983

Ministry of Natural Resources
Field Organization Chart 1983

Statement of Budgetary Expenditure

for the Year ended March 31, 1983

Ministry Administration Program	$ thousands
Main Office	4,581
Financial Services	2,641
Supply and Office Services	4,204
Personnel Services	1,576
Information Services	3,460
Systems Development Services	912
Legal Services	946
Audit Services	814
Field Administration	31,898
Total for Ministry Administration	**51,032**
Land Management Program	
Conservation Authorities and Water Management	48,707
Aviation and Fire Management	38,679
Extra Firefighting	2,981
Land Management	21,957
Resource Access	4,100
Surveys and Mapping	11,656
Total for Land Management	**128,080**
Outdoor Recreation Program	
Recreational Areas	31,649
Fish and Wildlife	40,902
Wasaga Park Community Project	2,377
Total for Outdoor Recreation Program	**74,928**
Resources Products Program	
Mineral Management	21,848
Forest Management	89,447
Total for Resource Products	**111,295**
Resource Experience Program	
Junior Rangers	4,758
Youth Corps (Experience '82)	2,931
Leslie M. Frost Natural Resources Centre	1,294
Total for Resource Experience	**8,983**
Total Budgetary Expenditure	**374,318**

Statement of Budgetary Revenue

for the Year ended March 31, 1983

Ministry Administration Program	$ thousands
Reimbursement of Expenditures	
Other	80
Sales and Rentals	1,656
Recovery of Prior Years' Expenditures	54
Other	76
Total for Ministry Administration	**1,866**
Land Management Program	
Royalties	
Water Power	23,618
Timber Area Charges	3,281
Mining	
Sand and Gravel	1,406
Acreage Tax	528
Fees and Licences	923
Reimbursement of Expenditures	
Government of Canada	1,103
Other	361
Sales and Rentals	2,046
Sale of Crown land	1,692
Recovery of Prior Years' Expenditures	151
Total for Land Management	**35,109**
Outdoor Recreation Program	
Reimbursement of Expenditures	
Government of Canada	270
Other	210
Recreational Areas	7,913
Fish and Wildlife	14,570
Recovery of Prior Years' Expenditures	2
Sales and Rentals	492
Royalties	729
Total for Outdoor Recreation Program	**24,186**
Resources Products Program	
Mineral Management	
Profits Tax	26,179
Royalties	4,049
Fees and Licences	453
Sales and Rentals	1,455
Forest Management	
Stumpage	39,172
Forest Products	268
Stock Production	665
Reimbursement of Expenditures	
Government of Canada	1,187
Other	13
Sales and Rentals	547
Royalties	185
Total for Resource Products	**74,173**
Resource Experience Program	
Frost Centre Facilities	401
Total for Resource Experience	**401**
Total Budgetary Revenue	**135,735**

Associated Agencies, Boards and Commissions

The Ministry of Natural Resources is associated with a number of agencies, boards and commissions. Each of these relationships is based on natural resources management, and varies from group to group.

Some of the relationships are informal. The ministry is Ontario's official natural resources manager, and often participates informally in the activities of other government and private agencies to promote co-operation in the effective management and protection of the province's natural resources. There are many public and private agencies in Ontario whose goals and objectives are compatible with those of MNR. Such groups as the Nature Conservancy of Canada, the Ontario Forest Industry Association, the Ontario Heritage Foundation and Parks Canada are examples of the many different groups whose interests lie within the natural resources sphere. MNR's informal relationships with such groups encourage co-operation in the policy, planning and development of Ontario's natural resources.

Other relationships are more direct, through administrative or financial links between different groups and MNR. Some of these associated agencies produce individual annual reports, and the reader should refer to the separate annual reports of the following agencies for information on their activities during 1982-83:

- Algonquin Forestry Authority
- Conservation Authorities (Ontario had 39 Conservation Authorities operating during 1982-83)
- Provincial Parks Council

The following is a brief description of the agencies, boards and commissions that are financially or administratively associated with the ministry, and do not produce separate annual reports of their own.

Mining and Lands Commissioner

The Mining and Lands Commissioner exercises administrative and judicial functions over a number of statutes which are administered by the Ministry of Natural resources. During 1982-83, the Commissioner conducted 44 hearings. Of these, 27 hearings and appeals were under The Mining Act, 16 hearings and appeals were under The Conservation Authorities Act, and one hearing was held under The Lakes and Waters Improvement Act. No hearings or appeals were heard under The Beach Protection Act or The Mining Tax Act in 1983-83.

On July 1, 1982, the Commissioner's office moved from the fifth floor of the Mowat Block in Queen's Park to 700 Bay Street, Toronto.

Provincial Boards of Examiners

Every year, MNR staff are appointed to two provincial Boards of Examiners, which set the written and practical examinations for wood measurement. The Board members used to be appointed by the Lieutenant-Governor-in-Council but, in 1982-83, were appointed for the first time by the Minister of Natural Resources.

The boards are responsible for making recommendations to the Minister of Natural Resources for the issuing of a provincial Scaler's Licence to successful examination candidates. Scaling is the process of estimating the quantity and quality of standing timber so that its processed value may be pre-determined. In 1982-83, the Boards examined about 125 candidates for Scaler's Licences, and the Minister of Natural Resources issued Scaler's Licences to 81 successful candidates.

Game and Fish Hearing Board

This board is composed of five members, who are appointed by the Lieutenant-Governor-in-Council. It conducts hearings into cases where the ministry has refused an application for a commercial hunting or fishing licence. The Board hears evidence and delivers a written summary and recommendations to the Minister of Natural Resources, who then may or may not issue a licence.

Public Agricultural Lands Committee

This committee reviews all applications for public lands required for agricultural purposes. The committee is composed of staff from MNR and the Ministry of Agriculture and Food. During 1982-83, the committee dealt with 12 applications, most of which were from farmers who wanted to enlarge their operations on Crown lands in northern and northwestern Ontario.

Ontario Geographic Names Board

The Board was established by statute in 1968, and is made up of seven members — two from MNR (including the Surveyor General) and five appointees from the private sector. The Board is Ontario's official custodian of a bank of records containing approximately 120,000 geographical names. To date, about half of these names have been officially approved for government use on all maps, charts, gazetteers and other government publications.

During 1982-83, the Board advised the Minister of Natural Resources on matters affecting Ontario's place names and developed policies on the jurisdiction, legislation and storage of Ontario's geographic names. The Board also developed policies on the treatment of French language names in Ontario. The Board's Secretariat prepares submissions, processes recommendations, correspondence and enquiries. It also meets with local government organizations in order to resolve disputes. The Secretariat handles all official geographic name changes for the province. The Surveyor General for Ontario co-ordinates Ontario's representation at meetings of the Canadian Permanent Committee on Geographical Names.

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